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Original Contributions.

CRITICAL PERIODS IN THE HISTORY OF THE HUMAN TEETH.

BY C. N. JOHNSON, D.D.S., CHICAGO. READ BEFORE THE TRI-STATE DENTAL MEETING, INDIANAPOLIS, JUNE, 1901.

A close study of the history of the teeth of individuals will reveal a somewhat marked variation in the tendency to decay at different periods of life, and this variation, though not universal, nor of constant uniformity in its manifestations, is yet of sufficient regularity and significance to merit the most careful consideration. To gain anything like an adequate conception of what this variation means, it will be necessary to study briefly the causes which lead to caries and the influences which govern it. To-day we think we know the exciting cause of dental caries, but of the influences which modify its action we are not so certain. In fact, when it comes to the conditions in the mouth which make for or against the tendency to caries we are almost wholly in the dark. The first real ray of light upon this subject has been shed recently by Dr. Michaels of Paris, in his paper before the Congress in 1900, and further on I shall refer more explicitly to his work in this line.

The cause of caries, as demonstrated by Miller, is an acid formed as the result of the propagation, development and death of microorganisms in the mouth, but the reasons why we find the teeth of some individuals extensively attacked by caries, and others practically free from it, have never been sufficiently explained—particularly in view of the fact that we may find microorganisms in all mouths. Nor do we know why it is that in the same individual there are times when the carious process is exceedingly active and others when it is almost wholly in abeyance. It was formerly thought this variation in the tendency of the teeth to decay was inherent in the teeth themselves, and that it was a matter of resistance on the part of the tooth tissue—some teeth being believed to

be too hard to be attacked, and others so soft as to invite attack. It was even thought that teeth in the same mouth would undergo changes from soft to hard, and hard to soft, in such a way as to account for the variation in the manifestations of the disease. Without pausing to go into the question of the structure of the teeth, it may be said that teeth do not grow intermittently hard and soft in this way, nor is there sufficient variation in the structure of the teeth of different individuals, to account for the great variation in the tendency to caries. It is then a question of environment more than one of structure, and the conditions surrounding the teeth must be held accountable rather than the teeth themselves.

In this view of the case it may become necessary for us to study carefully the conditions in the mouth, the character of the fluids therein, and to learn, if we may, the particular elements in these fluids which tend to advance or retard the decay. It is along this line that Michaels seems to have directed his efforts, and in the condensed report of his paper given in the *Cosmos*, December, 1900, and *DIGEST*, February, 1901, we find suggestive references to the significance of saliva as an index to diathesis. Michaels did not confine his observations to the subject as it relates to dental caries, but studied saliva with relation to its general diathetic significance, and it would seem that he studied to some purpose, in view of his claim that he made out a correct diagnosis of cancer in one case by the mere examination of the blood, urine and saliva of the patient. It is to be hoped that this study will be carried further into the field of caries of the teeth, for as the report of his paper says: "The conclusion to be deduced from the foregoing is that so long as we have not discovered the cause of morbid states, and so long as we have not made a serious study of the essential factors of biochemistry and of the relations of diathesis with the salivary excretion, we will not be in a position to explain in a precise way the morphological differences of dental caries."

But the moment we recognize the fact that the carious process is influenced more by the conditions surrounding the teeth than by the character of the tooth structure itself, we are placed in a more intelligent relation to the matter and are in a better position to study the factors which bring about the variations which we see in everyday practice. The time will come when we shall be able to determine definitely the precise element or elements in the fluids of the

mouth which render a given mouth susceptible to the disease of dental caries, as well as those which render it immune, and following this we may hope to so treat our cases as to bring about a condition of immunity in a mouth which has heretofore been susceptible.

It is the purport of this paper to direct attention to observations made in daily practice, with the hope of stimulating the profession to a study of this most important subject, it being confidently believed that even with the light of to-day we must recognize the significance of varying susceptibility and immunity, and turn it to excellent account in a more enlightened service to our patients. Dental caries is essentially a disease of youth, in the sense that it makes its most rapid advance while the patient is yet young. If it can be held in check till the patient is twenty-five years old the greatest danger is past. The period of youth then is critical, and while the age limit cannot be set with accuracy it may be said that in susceptible patients the teeth should have constant supervision by the dentist from the time the deciduous ones show indications of caries. The desirability of keeping the latter as free as may be from decay has frequently received emphasis from writers on dental subjects, and does not require extended repetition here, except to mention two cardinal points which have a direct bearing on the early establishment of immunity.

The first is in relation to the fact that the presence of extensive caries invariably leads to discomfort in mastication, and this results in faulty habits of same, which when formed in youth are very likely to remain with the patient through life. That different individuals vary materially in their methods of mastication is apparent to anyone who has made a close study of the subject, and since all individuals have been originally given by nature a masticating apparatus of practically the same pattern, it is only reasonable to presume that the variations noted must be the result of habit. To keep the teeth and surrounding tissues in a normal condition, it is necessary to maintain the full functional activity of the parts, and if dental caries is to be prevented or controlled it is desirable that the teeth should be kept sufficiently comfortable to admit of adequate functional use. The part that mastication plays in the prevention of caries, aside from the general health of the patient through digestive influences, and the stimulation of the surrounding tissues through healthy exercise, relates to the mechanical

cleansing of the surfaces of the teeth by the friction of the food in passing over them. If all of the surfaces were so situated as to be wiped clean by mastication, and if mastication were performed to the full limit, we should seldom see decay. In the light of this it becomes necessary to establish in the mouths of our young patients normal habits of mastication, and this can be done only by keeping the deciduous teeth in a condition comfortable for mastication while the child is forming these habits. This matter is seldom studied with sufficient care by dentists.

The other point connected with the care of the deciduous teeth relates to the effect which neglected caries has upon the prolongation of susceptibility. In other words, it seems that in a mouth where it would be natural in the course of events for immunity to take place at or near a given age, the period of immunity is delayed and that of susceptibility prolonged by the presence of neglected cavities in that mouth. Like begets like and caries begets caries. It is not always possible to control caries in the deciduous teeth, on account of limitations both in patient and operator, but the dentists of to-day should approach this question in a different relation from those in the past, and with the added incentive of establishing in the mouth of his patient an early immunity from the ravages of decay. This should be the keynote of his management of the teeth of children, whether deciduous or permanent—to check every cavity in its inception, and to check it in such a way that it will remain checked in all cases where it is possible. Suppress caries as if it were a deadly and contagious disease, of which nature it in fact seems to manifest certain symptoms when it attacks the teeth of children.

In line with this treatment preventive measures should be taken in guarding the permanent teeth while they are erupting in those mouths where a pronounced tendency to decay is manifest. The first permanent molar should in all cases be the object of especial care, on account of its early eruption and its consequent liability to decay, and also because it is of all others the most important tooth in the mouth. The moment it shows through the gum, the occlusal surface should be protected from decay by carefully cleansing it with alcohol, drying out the sulci and fissures, and forcing into them some oxyphosphate of zinc. This will tide the tooth over a very critical period in those cases where the tendency to caries is great. Frequently these teeth decay in the occlusal surface on their

journey from the gum to the occluding tooth, and if protected at this time they are often kept free from further trouble by the friction of food in mastication when they have reached their full length. This is only one among many methods by which the teeth may be safeguarded and carried across the danger line.

The most critical period so far as decay of the teeth is concerned may be said to be up to the twentieth year, though many cases exhibit progressive caries past this age, and very many others take on a condition of practical immunity earlier than this—particularly those cases in which the dentist has had full charge of the teeth, and has exhibited an intelligent conception of the possibilities of advancing the time of immunity by a prompt suppression of the carious process immediately on its manifestation at any given point. This is not a mere illusory theory but a practical point, offering the greatest encouragement in our daily work, and it is growing more and more manifest from a close study of many cases in practice.

I should like to mention one case which has come prominently under my notice, and which seems very significant in this connection. About eleven years ago a mother brought her two children to me—a girl of nine or ten and a boy two years younger. Caries had shown itself in both cases, and the parents were fearful lest the children's teeth should be lost. The history of both parents' teeth indicated a tendency to caries. The father had lost many of his teeth from decay, and those that remained were quite extensively filled, though at this period immunity had manifested itself and the tendency to decay had practically ceased. The only work I have ever had to do for him has been to renew fillings that have failed, or to fill surfaces cut away by erosion. He has lost no teeth since he became my patient. The mother had had a severe struggle to save her teeth. She had lost only two or three, but the remaining ones were freely filled, and she wore several crowns. Altogether the hereditary outlook was not promising, but I was determined to do everything possible for the children.

My plan of procedure in those cases was precisely like that already suggested. I watched for the first speck of decay and checked it. I saw the children at regularly stated intervals—for a time, every three months, then, as the cases seemed to permit, every six months. I had caries in those mouths practically fought to a finish at fifteen years of age. I have had to do work for both chil-

dren since then, but it has consisted merely of placing gold fillings in cavities which previously had been, of necessity, filled with oxyphosphate of zinc or gutta percha. I have never lost a gold filling in either mouth, and have never had a recurrence of decay around a gold filling. As for amalgam, it has never touched the teeth of either, and it never will. Their mouths are a delight for a dentist to look upon, and I feel so certain that the victory is won that I am never in dread when they make their periodical visits.

A comparison of the teeth of these two children with those of their parents, when the former shall have reached the age the latter were when I first saw them, will argue something in the way of endorsement as to what may be accomplished by modern dentistry. And, following along this same line, if it were possible to accomplish these results for each succeeding generation it would not be many decades before the control of caries would be a comparatively simple matter.

Yet we must not conclude that the problem of saving the natural teeth is entirely solved. There are other critical periods besides that of youth, and even when we have once established a condition of practical immunity we may have a return to susceptibility. For instance, an illness may change a mouth from an immune to a susceptible one, and we sometimes find a variation in the tendency to decay without being able in any way to account for it. One of the most potent factors in this regard seems to be the influence of climate, or the change from one country to another. Foreigners coming from Europe to reside in America often manifest an increased tendency to caries, and the factory girls in some of our Eastern cities, coming recently from foreign countries, particularly those from Norway and Sweden, show the most astonishing development in this connection. It is recorded that girls who come here with teeth practically free from caries are frequently known to be attacked so vigorously by this disease as to lose all their teeth in a few years.

One other critical period must be mentioned, though it is of less import than those already referred to. When teeth are lost in advancing age it is usually the result of failure of the surrounding tissues, so that the teeth loosen and fall out from lack of a support, but in some instances there develops in the mouths of elderly people a marked tendency to decay, in teeth which have previously been comparatively free from it. The character of this decay is usually

different from that which attacks teeth earlier in life, and is the result of a recession of the gums, whereby the neck and root of the tooth is girdled with decay at a point rootwise of the enamel. This form of decay is very disastrous, and more difficult of control than the ordinary forms, where the penetration is deeper at a given point.

The practical lesson to be learned from a study of this entire question of periodical immunity and susceptibility lies in the hope it gives us of eventually combatting the disease of dental caries, even in some of the most desperate cases. If we have the ultimate welfare of our patient fully at heart we will not carelessly abandon the teeth of any patient who expresses a desire to have them saved, and with those patients who are lukewarm on the subject or who are easily discouraged when the carious process seems persistent, it is our duty to so inform them in regard to the history of dental caries as it relates to the expectancy of an approaching immunity, that they may take heart and cooperate with the dentist, and the greatest possible number of the natural teeth thus be saved. The fact is, that it is the rarest possible exception where it ever becomes necessary for an individual to lose a tooth by decay if dentist and patient do their duty. And if this be true, have we not as a profession much to answer for? If teeth are being lost by caries to-day, it is either because we are incompetent ourselves, or else because we have not educated our patients up to the point where they will cooperate with us to their own ultimate good. We cannot, of course, work miracles, either in the way of execution or education, but we can at least study the greatest possibilities which modern scientific dentistry offers us, and can then do our utmost to live up to them. If we will do only this, we have the assurance that we shall thereby benefit humanity to a greater degree than we are doing to-day.

ORTHODONTIA.

By J. N. MACDOWELL, D.D.S., CHICAGO. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT ROCKFORD, MAY 14-17, 1901.

The history of orthodontia dates back about 350 years. During the first 275 years progress in the methods of treatment was slow, tedious and fraught with many failures, owing to various reasons. Undoubtedly two of the most important were, first, ignorance as to the practicability of moving teeth some distance, or to just what

extent teeth could be moved with safety and success; second, neglect in constructing proper appliances to accomplish the movement of teeth. Lack of appliances that would secure proper results seems to have been one of the greatest impediments to the advancement of orthodontia. Whether it is due to a lack of appreciation, or whether the dentist did not care to jeopardize his practice by experimental work along this line, records indicate that the cases treated and instruments used up to seventy-five years ago were in many respects the same. These aids were crude, heavy and bulky, and undoubtedly a source of great annoyance to patients. They consisted of flat, metallic arches, springs, bars, plates, inclined planes and cribs in place of the clamp bands of to-day. In 1849 the vulcanization of rubber was discovered and then these metallic appliances were used in connection with rubber plates. Next came the jack-screw and the strips of metal for banding the teeth, and finally the use of the head-gear. Then rapid changes began to be made, not so much in the principle of these appliances, but in construction and finish, and the result of this new effort was to open up greater possibilities in the treatment of cases.

It may be safely said that the last twenty years have witnessed more changes in construction of appliances and results accomplished in treatment than all the previous years combined, and now each passing year witnesses the introduction of some new method, some new appliance or some new attainment, which to-day has created out of the insignificant branch of even fifty years ago a specialty so broad and exacting as to demand one's entire attention to successfully cope with every phase of the subject.

Summing up briefly some of the most important considerations necessary in this branch of dentistry, we have *First*, The Teeth. A scientific study of their form, function, number and occlusional contact obtained through the medium of comparative dental anatomy. *Second*, The Artistic Phase; that is, movement of the teeth for building out or contouring the facial outline, and alignment for facial adornment. *Third*, The Practical Phase, the movement of the teeth to a better occlusional contact, for mutual support, better mastication of food substance and reducing the liability to caries induced by crowded teeth. *Fourth*, Appliances and their application. *Fifth*, Etiology, including anomalies of the teeth, physiological and pathological changes.

One or two subjects coming under the head of etiology have apparently been neglected. This failure to record the condition and results of undeveloped, tardy and supernumary teeth is not the result of indifference to such conditions, because anomalies of the above form appear frequently, and a definite knowledge as to the development, position and identity would modify the course of treatment of many cases. The neglect is due to the inability to diagnose or record such conditions definitely. Since the advent of the X-ray the veil that has shrouded such conditions in mystery is lifted, and the eye of man now looks and sees the invisible—the unknown of the past.

Here under the head of etiology is to be found one little phase that has a whole world of opportunity in itself. Cases are presented daily that can be settled definitely only by the use of the X-ray. In taking skiagraphs of cases where the temporary teeth have been retained until maturity, by comparison it is found that about one-third of such cases have failed entirely to develop permanent teeth, and the sad mistake of extracting the temporary tooth before ascertaining definitely whether the permanent tooth is ready to erupt or is in the alveolar process, is frequently made. With *undeveloped teeth* and *delayed eruption* it has been in the past a matter of guesswork. The writer has in two cases made room for missing teeth, only to find out with the advent of the X-ray that they had failed to develop; whereas if this had been known prior to treatment at least one tooth would have been sacrificed in the opposite arch to harmonize the condition. In another case the mistake was made of extracting a tooth in one arch, the parents asserting that two of the permanent teeth had been removed in the opposite arch. Four months after extracting there were indications of the eruption of the supposed extracted teeth. A skiagraph was taken and both of the teeth were located in the alveolar process.

In another case, age 13, a second bicuspid was supposed to have been extracted two years before. The first molar and first bicuspid had almost closed the space up. In this case, after debating upon the extraction of a tooth in the opposite arch to aid the treatment, the plan of enlarging the arch and inserting an artificial tooth was decided upon. In six weeks after enlarging the space there was indication of a tooth erupting. A skiagraph was taken, which disclosed a completely developed bicuspid deep in the process.

Such conditions are often due to early extraction or blows or falls before the age of six years. The condition of many cases of this kind is most deceiving, everything indicating that extraction must have taken place. There will be the little ridge of corrugated tissue, a flat, sunken appearance at that point, and external diagnosis seems to indicate the loss of the tooth. So deceiving are some of these cases that it is only with the use of the X-ray that a definite diagnosis is obtained.

Frequently supernumary teeth erupt with well developed and well proportioned crowns, most puzzling conditions to contend with, owing to the inability with external diagnosis to definitely decide which is the permanent tooth. In reviewing the skiagraphs taken of cases of this kind it was found that even if the crown were normal in size and form, in every case there was some malformation of the root of the supernumary tooth, which certainly eliminated the uncertainty as to which tooth to extract.

The result upon the position of teeth and size of the arches, as the result of undeveloped, tardy or supernumary teeth, if allowed to continue, is most evil, not only as regards the graceful, harmonious alignment desired and appreciated by every one, but the facial outline also is often involved. To further illustrate the possibilities of the X-ray in this work, and also the fact that its use in dentistry is unlimited, some experiments and interesting cases are illustrated with the lantern, which may aid and encourage others to carry on this most satisfactory method of diagnosing cases of this kind. [Seven skiagraphs were then thrown on the screen.]

Discussion. *Dr. A. E. Matteson, Chicago.* Those of us who did regulating years ago can readily appreciate the advantage which the skiagraph gives in this work. I believe that the improper extraction of deciduous teeth causes more irregularities than any other one thing, yet it does not seem to be fully realized by the profession. In some sections of the country dental irregularity is strikingly common, and it can usually be traced to careless or ignorant practitioners who did wholesale extracting of the temporary teeth. Such methods might have been excusable in the past, but they are not at the present time. If there is any doubt in regard to a case a skiagraph should be made, but the safest practice is to leave the temporary teeth undisturbed until the permanent ones make their appearance.

Dr. Grafton Munroe, Springfield: The value of the X-ray cannot be questioned, but in small towns extraction is simply a matter of judgment with the operator. No one who has studied the matter doubts the advantage of not touching the temporary teeth, but the most harm comes from the lamentable ignorance on the part of parents as to whether the teeth belong to the first or second set. The prevention of irregularities and other dental disorders will be possible when children in the public schools are required to have their mouths examined just as much as to be vaccinated.

Dr. C. S. Case, Chicago: The X-ray is almost indispensable in my practice, and I frequently send patients to a specialist to determine that which it is impossible for me to know without this aid.

Dr. McDowell: There are many other departments in dentistry where the X-ray is just as useful as in orthodontia. Such conditions as alveolar abscess, perforation of the roots of teeth, abscess of the antrum, etc., can all be beautifully disclosed by its use.

DENTAL SCIENCE AND LITERATURE, REPORT OF THE COMMITTEE.

BY A. W. HARLAN, D.D.S., CHICAGO, CHAIRMAN READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT ROCKFORD, MAY 14-17, 1901.

The standing committee of such a society as this are supposed from year to year to present a report which will epitomize the advances made in the respective departments, so that those who do not have access to all the periodicals published in English may know what has been furnished that is new or valuable. It is well to define what is meant by science, or even what is meant by literature, so that the report will convey to the perception of the listener all that is really valuable. If we present a list of papers read before societies, or of new books, or new editions of old books, or make mention of an original contribution, without giving a list of all contributions, etc., some one will feel hurt because his effort was not catalogued. To steer clear of partiality and to mention really meritorious papers or books requires of the reporter a rare judgment and an unflinching discrimination. In my reports in former years I have not felt it my duty to cover the whole of the vast field contemplated by the title of this first committee. This perhaps has been an error; still the reports have followed each other, more in the nature

of giving a stimulus to thought—not as an authoritative edict from the supreme arbiter, from whose verdict no appeal could be taken.

In looking over the work of the last fifty years in the United States I have thought it might be well to consider some of the forces that have impelled progress. Can you say that the engines of greatest force have been dental colleges, or periodicals, or legislation, or societies; or have the independent students and thinkers and the authors of books done most to make the close forces effective in bringing us to the beginning of the new century.

After the beginning of the year 1850 the fourth edition of Harris' "Principles and Practice of Dental Surgery" was published, and for nearly fifty years it has led all other works in molding the thoughts of dental surgeons, not alone in this but in all other countries. It was not second even to the work of Sir John Tomes, which was published in 1848. In the period from 1850 to 1860 continuous-gum work, vulcanite, and cohesive gold came to us in the United States. The work of greatest influence and value to dentistry was that of Robert Arthur, published in 1857, called "A Treatise on Adhesive Foil." Crystal gold, it is true, was discovered before the appearance of Arthur's book, but the latter was of the greatest importance. It was the beginning of the methods of filling teeth now so prevalent. What would the twentieth century dentist do without cohesive gold? During the decade just mentioned anesthesia, dental chemistry and metallurgy, dental medicine and operative dentistry, new forces in progress, were launched in independent treatises by Piggott, Nutt, Flagg, Bond and Taft, five names that every dental student should know and revere. Allen and Hunter, in porcelain, published their processes during this period, and Richardson his famous work on mechanical dentistry for many years, up to 1890, almost the only authoritative work in any language for the instruction of students. The first dictionary of dental origin belongs almost to this period, as it was published in 1849.

The works of real merit on orthodontia did not appear until a later period. This decade witnessed many improvements in plastic surgery, due to the introduction of anesthesia. I do not include everything that was done, but merely point out to the student some of the real inspiring forces brought into play by masters of these subjects. In the period from 1860 to 1870 two important discoveries were made by Legros Robin and Magitot, and S. C. Barnum,

the latter being the introduction of rubber-dam. With the advent of this tremendous aid to the operative dentist came the dental engine. Nothing during this decade rivals in importance these two additions to the working capacity of the dental surgeon. It is true that the development of the teeth and dental pathology emerged from their obscurity into actualities during this period, but by this time their importance in pushing on the profession as a profession was not so great a moving force as the two I have mentioned. What would we do without the engine and the rubber-dam? The dawn of actual modern orthodontia belongs to this period. Every department of practice received great and lasting impetus during these ten years, methods and materials multiplied, teaching became more systematic, societies grew in importance and usefulness, periodicals multiplied, legislation began in this and other countries, but not all of these gave so much to the world as those now common adjuncts to the armamentarium of the dentist.

From 1870 to 1880 came the first systematic work on the germ theory of diseases, the importance of antiseptics and disinfection, and the stupendous work of Kingsley in orthodontia and mechanical surgery, Bonwill on electric mallets, and the work on the cause of caries through the agency of microorganisms. The students, experimenters and inventors of this period made it possible for those in practice to-day to be so well prepared to meet nearly all emergencies. The best works on the surgery of the face had their inception during this period, from 1860 to 1880, through Heath, Burr, Gering, Kingsley, Garretson and others. The other most notable works are those of Leber and Rutterstein, Magitot, Wedl and Tomes, on fungi, dental pathology and anatomy. There were new editions on many works, but what we are trying to do is to mention the new forces that count in adding to the stores of human knowledge. During the period from 1880 to 1890 Webb in his little book was the most potent factor in operative dentistry, and Blode, in his work on poisons produced by microorganisms, and the primitive and periodontal membrane mark new epochs in the studies of a scientific character. It was during this period that Miller produced his permanent impression on scientific thought throughout the world. There were many works on all subjects of theory and practice, scientific and practical, and not the least of these was that of Angle on orthodontia. During this decade we had the American System of Dentistry.

This, well written by many authors, was perhaps of more importance than any single volume produced during this time. It is so recent that you are all familiar with it.

Running through the period from 1870 to 1890, all of modern bridge-work and crown-work attracted the attention of the world, and enlisted so many adherents that it were invidious to single out any one name, unless it might be safe to say that the work of Evans should be considered as the pioneer in a single volume.

During the decade from 1880 to 1890 was witnessed the incessant thought on all of the so-called practical subjects, and an awakening to the necessity for a study of the underlying principles of the whole practice of dental surgery. During this period was developed the idea of specialties in dental surgery, and it might be said that oral surgery, orthodontia and prosthesis began to attract the attention of specialists in these departments, to the abandonment of a general practice.

From 1890 to 1900 journals and societies and congresses multiplied at such a rate that it was impossible to read what was written, or to attend the important meetings without great sacrifice of time. This period witnessed the evolution of the American Textbooks of Operative and Prosthetic Dentistry, the work of Marshall on the Surgery of the Jaws, Talbot and Nash on pyorrhea, and numerous works of lesser importance, but all of value and showing the growth of a profession. The ten years just passed have, for one thing, developed into a most important way the practice of orthodontia, the revival of prosthesis, and the proportion of practicing men. This decade has also concerned itself with the composition of alloys and the shaping of cavities in teeth—almost to the exclusion of purely scientific subjects.

No truly scientific work has appeared on pathology in thirty years, not even that of Miller and Wedl, except here and there a glimmer of light has been shown. Recently the work of Goadby Rose, Choquet and Fitzgerald give us every reason to suppose that the next ten years will evolve much that is of value. The fragmentary work done in local anesthesia and in the works on pyorrhea give only evidence of a desire to do real work. Most of it is so loosely done that it is scarcely worth anything. It is not our intention to do anything with the work of the past year, as it is all very new and much of it you have already seen. The admirable

essays at Paris of Weston A. Price, Truman W. Brophy and C. S. Case, on the subjects of radiography, closure of cleft palate, and facial orthopedy, respectively, seem most worthy of mention.

As this report is not intended to specialize or specify any particular thing, I do not deem it a necessity to refer to dental legislation, journals, societies, or any of the potent moving forces in the molding of the prime elements of this profession into a symmetrical whole. Progress is the word; study is the secret, and practice is the unfolding of the widely acquired knowledge. No one man is the happy or sole possessor of all knowledge, nor would he keep it all to himself in this twentieth century, because he is so deeply indebted to the past that he would be a dullard who would not part with his little nugget for the accretions of the centuries.

Books of the Year. "Principles and Practice of Filling Teeth," by C. N. Johnson. This is an entirely new work devoted to the subject under consideration, which has received considerable notice at home and abroad. The author is a well known teacher, and it may be said that his students are among his steadfast followers. The book is well written and clear in its exposition of the principles of operative dentistry and is the best work of the year on that subject.

"The Treatment of Malocclusion of the Teeth and Fractures of the Maxilla," by E. H. Angle, is almost entirely a new book, although several smaller editions have preceded it. This work is copiously illustrated and will be of great value to all surgeons and orthodontists.

"The American Text-Books of Operative Dentistry and Prosthetic Dentistry" have appeared in the last year, edited by E. C. Kirk and Charles J. Essig. These are new editions and many new features are added to each. The new chapter by Dr. F. B. Noyes makes the work on operative dentistry particularly valuable, on account of the clear exposition of the matter for an understanding of enamel cleavage and enamel margins. These volumes now cover nearly the whole field to which they are devoted and are invaluable to students.

A second edition of Barrett's "Oral Pathology and Practice," copiously illustrated, has been issued since our last report. This work is of great value to students and practitioners, as it covers a wide field and the text is self-explanatory.

Evans' "Crown and Bridge Work" is in its sixth edition, which speaks well for its popularity and usefulness. The work has been brought down to date and it is a safe guide to follow.

Colyer on "Irregularities" is an English work which has some original thought, and for the most part is practical and easily followed. A work of this character is of value when you sit down and follow the directions of the author, make the apparatus described for immediate use. It is strictly orthodox, and has only a few minor blemishes which may be corrected in some future edition.

J. Sims Wallace publishes a book entitled, "The Cause and Prevention of Decay of Teeth," which has received much notice during the year in England.

Dudley W. Buxton, one of the well-known anesthetists in London, has issued a revised (third) edition of his work "Anesthetics, Their Use and Administration." This is a complete guide to this interesting subject.

Essig's "Dental Metallurgy," fourth edition, has been reissued, revised to date. This is now a very complete and useful work for students and also for reference.

Science. Every year the question of what to report upon in science must puzzle the reporter of this committee. One will say that the adaptation of plates to the roof of the mouth is science; another that a study of cements involves scientific training, and still another that science is chemical or bacteriological, or that the whole domain of biology is only scientific. Many papers have been published during the year by authors on a variety of subjects, but a careful scrutiny of the papers themselves will not throw much light on the respective subjects. I believe that the so-called practical subjects of extension for prevention, bleaching of teeth, treatment of loose teeth, and the porcelain question are still worthy of more study from the strictly scientific side. No directions for the use of different waters in the treatment of disorders of the gums have been given to the world. We do not know now, in spite of the vast amount of work done in bacteriology, the certain method of making the mouth aseptic. This is a field for much work of a painstaking character.

One thing that is noticeable in looking over the current literature is the evident lack of time spent in preparing papers to be read before societies. A vast number of subjects are written upon, but

few of the subjects are treated exhaustively. We might point out as an example of the proper method of treating a subject the paper of Grant Mitchell of Pittsburg on "Necrobiosis," read before the Pennsylvania State Dental Society in 1900. Of course, this is not the only exhaustive paper of the year, but it is a good one to follow.

Journals. The United States did not offer anything new in the journalistic changes of the year. One or two journals have suspended publication. We notice that the college journal is springing up everywhere, both in medical and dental circles. If we offered any criticism it would be that there is too much of the profession and too little of the student in most of them. Our idea is that the college journal is the training-school for the future writer, and that the student should collect and edit the material for his paper.

In Europe the new journals that appear are mostly of a local character, or are devoted to reprinting articles from other centers. This in a way is as much to the credit of the conductors as the publishing of poorly written contributions.

The dawn of a new century begins to show the greatest impetus of future development in dental science and in dental literature. Many of our old theories will have to be abandoned and new researches will place us upon a more secure foundation in all of the various aspects of science.

ANOMALOUS CASES OF MALFORMED TEETH, WITH SUGGESTIONS AS TO POSSIBLE CAUSE.

BY I. P. WILSON, D.D.S., BURLINGTON, IOWA. READ BEFORE THE ILLINOIS STATE DENTAL SOCIETY, AT ROCKFORD, MAY 14-17, 1901.

I desire to call attention very briefly to an exceptional class of malformed teeth that are rarely seen. Only four of these cases have come under my personal notice in thirty-five years' practice. From three of these I have procured models, and the history of each case so nearly as I could obtain it.

Case 1. The place of the left central incisor was occupied by a malformed tooth. The temporary central had been knocked out by a blow a year or two before the usual time for shedding it. The eruption of the deformed tooth was tardy, developing a year later than the other central. In form this tooth had a crushed-in appearance, with a small central cone, and three small cusps surrounding it. The labio-mesial surface was concave longitudinally, extending

to the base of the central cone. The cervical circumference of the tooth formed a circle. The enamel covered the crown somewhat imperfectly.

This chart illustrates two malformed teeth occupying the places of the central incisors. The temporary central had been knocked out at an early age. In general appearance the deformed teeth were similar to the one I have just described. Were it not for their chubby appearance, the labial surfaces would resemble closely normal incisors. The occlusal surfaces, like the one above described, had a crushed appearance, with three or four little projections rising above the blunt ends of the teeth. The gingival circumference was similar in form to normal incisors. In other words, the malformation seemed to be confined to the crown. You will observe also in this case two supernumerary teeth, which grade in appearance between the central incisors and the laterals, and occupy positions anterior to those teeth.

This drawing represents two anomalous teeth standing on either side of the median line, and directly posterior to the central incisors. The crowns resemble almost exactly the form of a percussion cap after it has received a blow from the hammer of a gun. I extracted these teeth and found the roots well developed and similar in form to central incisors. The crowns were well covered with enamel, which folded into a fissure in the depression on the end of each tooth. I could obtain nothing of interest from the twelve-year-old boy regarding the history of the case.

Another case came to me many years ago where one of the normal central incisors was missing, and a malformed tooth, similar to the one first described, had taken its place. The irregular labial surface was ground off and polished, which greatly corrected its unsightly appearance. This was the first case of the kind I had seen, and was regarded simply as a curious freak of nature, so I dismissed it without taking an impression or inquiring as to its history.

The first cut represents very closely a case reported in the American System of Dentistry, Vol. 3, p. 402, where the central incisors were lost by a blow, and a malformed supernumerary tooth took the place of the right central.

A brother dentist has called my attention to two cases of this class of malformations in his own practice, and in both the tempo-

rary central incisors were lost by violence. It will be noticed that all these cases of malformation were associated with the central incisors, while the supernumerary teeth in the anterior part of the mouth, so far as my observation has gone, usually accompany lateral incisors and resemble them closely in form and appearance, and are quite frequently reproduced in offspring. I have not found this to be true, however, with the malformed teeth of the class I have described. A freak or variation from a fixed type will usually be reproduced in both animal and vegetable life, while an acquired deformity will not be transmitted. May we not infer, then, that these malformed teeth are the result of traumatism?

Out of the six cases I have named four were known to have lost their temporary central incisors from a blow, and one, reported in the *Cosmos* and quoted in the American System of Dentistry, to which I have referred, was given by non-professional observers as being the permanent centrals that were knocked out and afterwards replaced by a malformed tooth and two other normal centrals. In this instance the teeth removed by a blow were evidently temporary and not permanent, which would make the case exactly like the first one I have here reported. Including this one, five of these cases out of six lost their temporary centrals by a blow.

If the accident that occurred in each of these cases had nothing to do with the malformation in the several cases we certainly have, to say the least, a remarkable coincidence. And again, if the supernumerary teeth that were present in most of these cases would have developed had the accidents not occurred, we have another coincidence equally remarkable.

I will now venture a suggestion as to how these malformations may have taken place. The deciduous teeth with roots half absorbed were probably driven against the immature shells of the permanent teeth, crushing them in and pressing the pulp tissues below out of shape, when the shattered caps in their malformed condition again united, as a broken bone will unite regardless of its correct position. The pulp also was crowded and made to adapt itself to the irregular matrix that was formed. Growth was retarded and limited in the normal direction, when nature sent out an offshoot, which rapidly developed into a more or less perfect tooth or teeth.

We may reason from analogy in the vegetable kingdom. Break

off or crush a sprout that is germinating from a seed, and if the germ has not been destroyed it will usually send forth one or more sprouts below the injured part. And again we may turn to the animal kingdom and find another striking analogy in caponizing fowl. If a *testis* be crushed and seemingly destroyed in snaring it away, and a small segment is allowed to remain and is not cut off from its source of life, nature will reproduce from it a second organ. This is called by the fancier a "slip," and the fowl has not become a capon. I have examined several cases of this kind and have found in each a reproduced organ, but always malformed. In one case where two small segments had been left each had developed into a marble-shaped testis, about half the size of the normal organ. This effort on the part of nature to repair injuries is manifested on every hand. My conclusions, then, are that these malformed teeth are possibly the result of an injury, and may it not be possible also that the supernumerary teeth so frequently accompanying them are offshoots from these crushed tooth-germs, which possess and communicate to each offshoot the three elementary tissues known as the dentin organ, the enamel organ, and the dental sacculus.

I am aware that objections of a physiological nature may be offered, and that the conclusions I have drawn are not conclusive. If this paper shall therefore be regarded as speculative in character, I hope that I have at least succeeded in provoking the discussion of an interesting subject that has not hitherto been well understood.

Discussion. *Dr. G. V. Black*, Chicago: If these malformations occurred very often they would be important. They are not frequent, yet throughout the whole country enough are found to make them worthy of consideration. I will now show some other specimens with the lantern. The first slide shows two casts with one supernumerary tooth in each. The next slide shows only one, but another had been extracted before it came through, so this case had originally two supernumeraries. The third slide shows three in the roof of the mouth, also the teeth that were extracted. In the infirmary we cannot secure the history of these cases so well as in a private practice. One of the patients, from whose mouth a tooth had been previously extracted, stated that his father and grandfather had precisely the same experience. I should like to know how frequently that occurs with these teeth.

Many of the supernumerary deformed teeth are conical or else

vary between that and some malformation. Dr. Wilson described a tooth with a rather short root and a large crown having the occlusal surface crushed in. I have here a very large tooth having a much larger crown than that of a normal incisor, with the same crushed-in appearance of the occlusal portion. When the patient, a young woman, came to me she was wearing a plate carrying a central incisor, and one corner of the crown of this was sticking through the gum, making it sore and causing the plate to fit badly: The patient first had an incisor knocked out, then a malformed tooth made its appearance and was extracted, next a plate was worn, and some years later she came to me with a corner of a malformed tooth sticking through the gum under the plate. I extracted it and the patient then cut a normal incisor, giving her a perfect set of teeth.

This slide shows another of those malformed teeth which come through in the incisor region. It differs somewhat in shape from the others. The next slide shows another abnormality, having a very fair shape of crown, but with the root much malformed.

So much for what we find. The question is, what is the cause of these occurrences? I have dissected many babies' jaws and have traced the formation of the teeth very carefully in them. In following up the epithelial cords from which teeth develop, I have seen many instances of irregularities, protuberances and apparent breaks from these cords, and have sometimes wondered whether these might not grow and form the supernumerary teeth. There are many variations in these epithelial cords. I made one or two pictures for Dr. M. S. Dean's book, showing irregularities in the formation of the epithelial cords, cases in which the permanent tooth had been derived direct from the epithelium of the mucous membrane instead of from the cord of the temporary tooth. Nevertheless, I have never seen a case in which I could say that it was going on to the development of a supernumerary tooth, and I believe no one in making dissections of the jaws of babies has as yet found an offshoot from the cord which could be said to have sprung off for the formation of a supernumerary tooth. That being the case, we must admit that we know nothing about this particular phase of the formation of supernumerary teeth. In the breaking up of these cords we often have whorls of epithelial cells filling the tissue in various directions, and several have suggested that the supernumerary

teeth are developed from these masses of epithelium which are thrown out during the absorptive process by which this epithelium is removed.

Now a word about the possible crushing in of these teeth by accident and the chance that the malformation spoken of comes from that cause. The position of the roots and crowns of the teeth is such that a blow upon the temporary tooth might cause it to be thrust against the permanent one, but the development of the crown of the latter has progressed so far at the time these accidents are supposed to happen that it would be impossible to crush it in. The enamel might be scarred and the enamel organ destroyed, but the form of the tooth could not be changed as we find it.

In dissecting the jaw of a child one and one-half years old the roots of the temporary teeth are not completed, yet we find the crown of the permanent central lying just beyond the end of the root of the temporary one. A considerable amount of dentin and enamel is already formed, and being backed only by the soft tissue of the pulp, any blow on the temporary tooth would not crush the permanent crown or even change its form. Taking a jaw at the age of two years, we see the permanent crown more than half formed and lying above and behind the root of the temporary tooth. We might readily dislocate that crown by a blow on the temporary tooth, but we could not destroy its form, so I think it will be admitted that the deformity of the tooth is not brought about by the accident, the latter being simply a circumstance and not a cause, for we have these deformities occurring continually without such accidents.

It is well that the vagaries of this tooth formation occur so seldom. To illustrate this I will throw upon the screen one or two pictures of odontomes. This first one was diagnosed as an odontome and removed. It is a large mass of enamel, dentin and cementum, thrown together in a most peculiar fashion. Here is the crown of an incisor, there a rounded crown, and the mass is made up of thousands of little bits of teeth, with enamel, roots and pulp-chambers all jumbled together and united loosely by cementum. The mass is an inch and a quarter long, which will give you a good idea of the size of the teeth. I have cut sections of some of these masses which seemed to be solid, but under the microscope have found that they were made up of tiny tooth forms, having their enamel, dentin and cementum. Now if one of these odontomes were broken

we should have a different kind of distortion. A splendid specimen presented to me some years ago shows that the tooth was evidently moved from its position, but the pulp was not destroyed and it continued its development.

I am much interested in the collection of such cases, and always keep them upon exhibition, so that any dentists coming to Chicago may see them. I should like very much for those who have specimens of this nature or anything unusual to send them to me, together with as full a history as possible, as in a large collection we can learn more about abnormalities than from isolated cases.

Dr. F. B. Noyes, Chicago: In some cases accidents undoubtedly do occur, and in knocking out the temporary teeth produce malformation of or else destroy the tooth germ of the permanent teeth. As the germ of the permanent tooth lies to the lingual of the root of the temporary one, if a malformation of the crown of the permanent tooth resulted from an accident, it would usually be the labial rather than the lingual surface of same which would be affected. If such accidents occur it must be very early in life, in fact, the crown of the permanent tooth is formed so completely before the root of the temporary one is even perfectly calcified that to have the accident which removes the temporary tooth injure the permanent one, otherwise than in a fracture at the neck, it must occur before the child is one year old. Supernumerary teeth are of two types, either a single cone or a multicusp form made up of single cones, and this latter, which causes the crushed-in appearance, is rather a reversion in type than the effect of a traumatism.

Dr. C. R. Taylor, Streator: One case in my practice was evidently the result of a blow. The patient, a girl, had her front teeth knocked out when twelve years old. Three years later I put in a plate and one year after that a tooth began to appear. It was a left central incisor and had an almost perfect crown, but the root was more of a bayonet shape. It looked as if it had been broken, and then coalesced without adaptation of the ends of the fracture.

Dr. Wilson: I am not disappointed in the course the discussion has taken, for I had noted the physiological difficulties to which Dr. Black has referred, but I had hoped that there might be more light thrown upon this rather obscure subject. The remarkable coincidences connected with the history of these cases seems to point to the possible cause being that of violence.

Digests.

SOLDERING HINTS. By J. P. Buckley. Do not use an excess of borax, and place only where you desire the solder to flow. Contiguity of surfaces or edges, to be united, can be obtained by swaging or bur-nishing together of surfaces, and by rasping ends with a fine flat file and securely holding together edges. Uniform heat, our third requisite. We have more trouble perhaps in cases to be soldered where an investment is necessary. The investment should be so trimmed as to be as small as possible without danger of fracturing in heating, and V-shaped places, if any, properly exposed so as to admit the air. Then if placed on burner and blow-pipe flames be directed first from the bottom and then on the sides until case is sufficiently heated, little or no trouble will be experienced in obtaining uniform heat. We should never attempt to finish our case after soldering without first heating it in sulphuric acid (50 per cent), then neutralizing the acid by dipping case in a solution of sodium bicarbonate and washing with water. The sulphuric acid dissolves the glass-like salt which may be formed by using an excess of flux and also thoroughly cleans any other material (particles of investment, etc.) which adheres to the case. The sodium bicarbonate neutralizes the acid, forming sodium sulphate, which is washed off by the water.—*Odontoblast.*

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VEGETARIANISM NOT WISE. The anthropoid stock from which man evolved fed on nuts, fruit, eggs, small birds and insects. Such is still the mixed diet of the ape, as well as of the Arabs of this age. Owing to the struggle for existence man has evolved into a flesh-eater, a mixed feeder, and lastly into a vegetarian, but vegetarianism became possible to him only by the introduction of fire and cooking. He has neither the teeth nor the gut of a herbivorous animal; otherwise he would naturally graze the fields, and in winter chew oats in a manger. It has been abundantly proved by breeders of pigs and other animals that the best proportion of albumen to carbohydrates in the diet is 1 : 5. Among the Eskimo it is found to be 1 : 29, among Europeans on a mixed diet 1 : 5.3. The Irish peasant, on the other hand, consumes, or used to consume, a diet containing ten times as much carbohydrate as albumen (1 : 10.6).

A diet such as that of the Irish peasant increases the death-rate in the young and the old; that is to say among those in whom the excess of carbohydrate cannot be burnt off by hard bodily labor. Such a diet can be consistently borne only by a man bred to it from infancy and accustomed to the doing of hard work. There is no advantage in vegetarianism as a working diet. The same amount of potential energy (33 per cent) consumed as food appears as work in the carnivorous dog, the herbivorous horse, and the omnivorous man. No vegetarian animal, not even the horse, ox, camel, or elephant, can carry the weight of his own body. The carnivorous lion, on the other hand, gripping a calf equal to himself in weight, can jump a hurdle 6 feet high. The lifting power of man, the mixed feeder, exceeds that of any other mammal.—*Brit. Med. Jour.*

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INCOMES OF DENTISTS AND PHYSICIANS. By Dr. E. H. Bowne, Kingston, N. J. The writer herewith presents approximately the combined incomes of the two professions in two prosperous New Jersey towns. In one there are two dentists, their combined incomes probably not exceeding sixteen hundred dollars. There are four physicians in this town, their combined incomes probably greatly exceeding twelve thousand dollars. The second town contains four practicing dentists, their combined incomes certainly not exceeding four thousand dollars. The six physicians in this town collect annually not less than twenty-five thousand dollars. These figures are approximately correct, and show beyond all argument or contradiction the enormous advantages of medicine over dentistry from a financial point of view. It is not to be wondered at that more young men are studying medicine than law and ministry combined. The labors of a dentist are exacting, vexatious and oftentimes very perplexing, and in the estimation of the writer far more exhausting and requiring more skill in many respects than medicine. The average pay of the dentist, at least of the country practitioner, is much too small for the exhausting labor and skill required at all times in his professional work.

In the Philadelphia *North American* of March 27, 1901, appeared an able and interesting article on the income of *country medical practitioners* in the Southern States of Louisiana and Mississippi. The article originally appeared in the *Times-Democrat*, the leading paper of New Orleans. According to same, the incomes of many

Southern country physicians range from five thousand to thirty thousand dollars per annum, the first income so often as not to excite comment. The writer has not the slightest doubt that the income of the dentists in the locality referred to by the *Times-Democrat* would show about the same figures as quoted regarding dental incomes in the New Jersey towns. As a matter of almost absolute truth close observation has demonstrated the fact that a section of country that would support half a dozen medical practitioners in almost affluence would scarcely support one dentist in a reputable manner. The prospect for improvement in the condition of dental fees looks gloomy enough in the face of abnormal competition and unethical methods used to secure practice, even at disgustingly low rates.—*Brief, June, 1901.*

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PEROXID OF HYDROGEN IN SURGERY. Honsell has made a praiseworthy effort to have placed on a scientific basis the status of H_2O_2 in surgery. As to its physiological and pharmaceutical properties, the author states that a three per cent (weight) H_2O_2 causes marked changes in both fresh and defibrinated blood, provided it is mixed in sufficient quantities with either. It kills infusoria and probably other isolated cellular elements. Living tissues suffer none by virtue of any chemical influence of the peroxid of hydrogen. Any damage may be traceable merely to mechanical action of liberated oxygen gas. The injection of H_2O_2 into the circulation, the peritoneum, or connective tissue kills the animals if sufficient be introduced. Death is caused by gas embolism of the lungs, nor could it be proven that death followed from any other cause. The application of H_2O_2 (three per cent) on free surfaces or open cavities causes neither local nor constitutional disturbances, no matter what quantities be used. More to the point in its bearing on the modern antibacterial treatment of wounds are the following conclusions of bacteriological experiments: A three per cent H_2O_2 is the equivalent of a 1:1000 sublimate solution acting on bacteria suspended in aqueous solutions, but H_2O_2 is superior to it in media rich in albuminous fluid and poor in cells; where the latter predominate, it is again on a par with solution of sublimate. The bacterial properties of 1.5 per cent H_2O_2 is inferior to aqueous solutions, but in media rich in albumen, wanting in cells, it is superior to it. A two per cent solution of acetate of alumina can in no

way compete with H_2O_2 . If the bacteria are in organic fluids, the antiseptic power of H_2O_2 diminishes in direct proportion to the extent of the catalysis of H_2O_2 effected by the respective solutions. In so far as we can draw conclusions from test-tube reactions, the powerful antiseptic action of H_2O_2 can be developed in urine and drinking-water, provided decided quantities of albumen are not present; on the other hand, in conditions met with in wounds whose catalytic tendencies will be marked, no more effect will attend its application than the use of HgCl_2 or acetate of alumina under like conditions.

At the clinic of Tübingen one per cent solutions were used on granulating and suppurating surfaces. The experience of the author concurs in the main with the practical results claimed by L. Championnière for H_2O_2 , whence he concludes that H_2O_2 exerts a beneficial influence on the course of suppurating wounds, particularly putrid and gangrenous processes. On fresh operating wounds it causes neither local nor benign remote consequences. Foremost as the cause of its influence on septic processes is its mechanical action of foaming the secretions. The chemical action, however, of H_2O_2 by virtue of its nascent oxygen was not proved. Perhaps a direct action of H_2O_2 on the tissues may exist. The foaming effects a cleansing of the wound surface without any injurious action, wherefore its superiority over acetate of alumina or sublimate solutions. While its hemostatic properties may make it available to the otorhinologist and gynecologist, in the strictly surgical field a chemical hemostatic is no longer sought. As a deodorizer it is instantaneous, powerful, and has no equal.—*Annals of Surgery*.

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PORCELAIN INLAYS. By W. A. Caton, D.D.S., Philadelphia. Clinic before New Jersey Southern Dental Society, February, 1901. I will start from the very beginning by showing a cavity, the simplest I know of, and this specimen will show it in a completed form; the corner of the same tooth is a great deal more difficult. The specimens that you may look at to-night have been done some time, in fact many of them were made several years ago, and you must make allowance for them, as they are dried, and because of my indifference in trying to shade an extracted tooth.

The tools required for this work are a pair of burnishers and a couple of rubber-tipped pencils. As we are working under difficul-

ties I will first burnish the foil in the easy cavity I have already shown you; it is a little deeper than you will usually get in a living tooth, and being deep there will be only the merest suggestion of a bottom to the matrix, a point that I wish to show you will make no difference to the fit or finish of the inlay.

The preparation of a cavity has, I think, much to do with success. I make the walls square similar to the preparation for gold, with the important exception that edges are left as square as possible. If you will run your finger over the edge of it you will find it sharp, and that is my guide; you can feel the edges of this prepared cavity. To accomplish this I use an inverted cone bur, or a barrel bur, and very frequently a small square edge stone. I never use sandpaper at all. With it you have to be very careful or you will round the edges, and that is what you must avoid. Many dentists have read about the Jenkins system and have become taken with the idea as he uses it; then they get his method and what I am showing mixed up and so are in trouble. Dr. Jenkins' method I may say is entirely different. In the first place the bottom of his cavities are smooth and rounded, he uses gold for a matrix instead of platinum, the impression must not have the slightest break and then it is invested in powdered asbestos. The porcelain is very low fusing, otherwise gold could not be used.

I recommend and teach the use of platinum and high fusing porcelain body and I know of no better than Close's, which I mix with water. The heat required to fuse it is about 3,000 degrees. I see Dr. Spring says 2,600. I think he is mistaken and his figure too low; maybe he is alluding to porcelain for repairing of continuous gum. Now this little matrix that I first made has no bottom at all, but that will make no difference if I am sure the body sticks to the sides. After placing the body in the matrix it takes a good deal of tapping to get a smooth surface if the body is mixed very stiff and thus avoid shrinkage. This is a point I know is not generally considered.

Some one asks if I generally dry out moisture in small work. I usually put them right in the furnace, but use more care with large sections and crowns.

Before trying the inlay in place, trim the excess of metal from the edges and thus allow a better idea of the outlines of the filling and simplify matters when burnishing the second time. Every inlay or

section is likely to slightly extrude from the edge of cavity; a piece of floss silk will show this; then take a small narrow stone and dress it even after the cement has hardened. If the inlay is a little lower than the tooth that is more desirable than the reverse.

Some one asks, How do you know when it is right before the material is fused? As there is always some shrinkage you have no guide but that gained by practice. Another says, How do you separate the metal from the porcelain? Always turn it away from the edges. There used to be all kinds of suggestions regarding the removal of the small pieces remaining on the back; and acids have been recommended, but an old discarded bur will remove the smallest remnant very readily.

The approximal cavity in anterior teeth is a very desirable place for porcelain, but porcelain in a finished form is an unyielding block and therefore requires plenty of space for ready adjustment, also for easy withdrawal of matrix from cavity; in fact the withdrawing of the metal form is the most difficult part of making an inlay for these places, and it must be tried to properly understand these instructions. Before burnishing the metal to place, consider which surface is the most accessible and draw the matrix from that side; if lingually burnish that surface as correctly as possible, but the labial surface is burnished only sufficiently to give the edge of cavity without flattening the metal to surface of tooth, thus allowing it to be taken from its place without changing the form of the main body of the mould. After the first baking there is not the same difficulty to contend with, for then the matrix is rigid and the excess of platinum has been removed. This is a practical point and will be of great assistance in many cases. These approximal fillings are very desirable and durable. There is no wear to them, you cannot wash them out and they are not interfered with in any way, and why in many cases they are not the very best I cannot understand. Of course I speak with a great deal of confidence, but I have had many years of experience, and to illustrate I will show a case I did nine years ago; this is not the oldest, for I have several in splendid order after almost twelve years, but this one I consider a test.

Fig. No. 1 shows a filling on the distal surface of left central, the lateral being an artificial crown. After four years the patient, a young physician, went to Germany to complete his studies, and

while there became acquainted with Dr. Sylvester, the court dentist, who looked at the work and ridiculed the idea that the porcelain was held entirely by the cement, and insisted that it would soon fall out. My patient returned to America and settled in Scranton, but unfortunately soon after his return he broke the lateral crown and the lower corner of the central, Fig. 2. Being a long distance from me he had the lateral replaced with a Logan, but would have nothing done to the central, preferring to have another porcelain filling when the opportunity came for a visit to Philadelphia. I replaced it a few weeks ago, also the lateral, but I will speak of the crown later in the evening. Fig. 3 will show the central as it was

*Fig. 1.**Fig. 2.**Fig. 3.**Fig. 4.**Fig. 5.**Fig. 6.**Fig. 7.**Fig. 8.*

repaired the second time. How I wished that dentist in Berlin could have been at my elbow when I took that old filling out? Perhaps he would have changed his mind about the way that piece of porcelain was being held, and this was five years after and two of that five the lower part of porcelain was exposed to general use through loss of the rest of its cutting edge. I used a small round bur between the lower edge and the tooth and then forced it out with a blunt instrument, and the force required was sufficient to send the remains several feet away. The last and one of the most important points of this case was to find the cavity nicely lined with cement and not the first tendency to decay or deterioration.

I shall now give you an idea on corners and cross sections and their attachments. Suppose we have a central broken as shown in Fig. 4. It is generally considered the proper way to trim them as in Fig. 5. I have found that after a year or two where porcelain is thin on the cutting surface it breaks away, leaving a little nick as

in Fig. 6, just large enough to be noticed and too small to repair, yet sufficient to mar what is otherwise a nice piece of work. I have overcome difficulty to a great extent by preparing the cavity very much like Fig. 7, which gives a greater body of porcelain at the weak spot. The cavity so shaped is a little more difficult to make a matrix for, because the angles are more difficult to burnish than straight edges or curves. This is an idea worth bearing in mind, and saves that little nick.

You ask me the question, "How I attach these corners and sections. Do I use wire or pins?" I use all porcelain when I can, otherwise I prefer wire in form of loop or staple. My preference is for all porcelain, and I mean by that porcelain extending into the cavity as far as possible and undercut deeply. There is a weak spot where the wire is imbedded, and that is on the lower point of wire next to the cutting edge as shown in Fig. 8. The porcelain is likely to break away at the point designated by the arrow. How-

*Fig. 9.**Fig. 10.**Fig. 11.**Fig. 12.*

ever, wire must be used in many cases and excellent results may be had by working carefully. Prepare cavity and make edges perfectly square and sharp, then burnish platinum foil, about No. 50, over surface and into cavity or slot, for in many cases it is not much more; then make a staple or loop like Fig. 9, from platinum wire No. 24, and push it through opening in the matrix, keeping both in position on the tooth. Mix porcelain with water and a little tragacanth into a stiff paste and force about ends of wire and over surface of matrix; absorb excess moisture with a pellet of bibulous paper, and gently lift from tooth and fuse in furnace. This will firmly attach the wire in position, and the foundation is assured without soldering and in a quick manner. The ends of wire projecting into porcelain should be serrated. Wire has advantage over pins in being less liable to displacement. When the contours are completed they will appear as in Figs. 10 and 11.

Many of my successes are corners and tips, and my oldest piece of porcelain work is a large central corner without pins. That work was done in December, 1889, and it is in splendid order to-day,

for the lady is one of my regular patients. The inexperienced are often tempted to build on a narrow cross section caused by abrasion or a slight break, something as shown in Fig 12. Such cases are not likely to be satisfactory. I had a lady patient from Washington about a year ago who had her central tipped with gold and wished it replaced with porcelain. The gold work was nicely done, but of course conspicuous; the gold also made the enamel dark along the edge. I explained to her that I could fix it with porcelain, provided she allowed me to shorten the tooth and make a deeper foundation; this I did and avoided sensitiveness by using ethel chlorid spray. I made a tip and attached with wire staple; it resembled Fig. 13. The change from gold to porcelain was a great improvement and I have no doubt will give every satisfaction. Yes, I use chlorid of ethel very frequently and to great advantage and have no bad results afterwards.



Fig. 13.



Fig. 14.



Fig. 15.



Fig. 16.

Early in the evening I spoke of replacing a Logan crown, Fig. 3. by a porcelain jacket crown, the greatest crown in existence, a broad statement, no doubt, but you will more readily believe me when I say that my records show almost a thousand in use, and in places impossible for other crowns to be used. However, my time is limited, so I shall only mention a couple of cases and describe the way the crown is made. In the first case the crown I wanted to replace was defective in shade and fit, but as firm as possible. I did not try to loosen it, but simply cut the porcelain down the middle with a disk and forced the two halves apart with a flat instrument, leaving the pin protruding as in Fig. 14. I usually build down to the point with amalgam and make a dummy tooth, but in this case I had not time, or at least the patient had not, therefore I took extra pains to fit it closely at the neck about edge of the root and I have no fear of his returning with it in his vest pocket; at least if he does it will be a new experience. My confidence is in the crown, not in my own ability; make it correctly and the results are surely satisfactory.

Porcelain Jacket Crown. This is made by fitting a platinum

band, No. 30, to the root or prepared tooth, as with gold cap work, except that the joint must overlap instead of abutting at the edges. The lingual and labial outlines of adjacent teeth are marked on the tube as a guide to grind those portions away, to gain shape, instead of cutting with scissors. Fig. 15. The lingual side is shaped with wheel on lathe, and a piece of same gauge platinum soldered to fit that portion, with a very small quantity of pure gold. Fig. 16. After trimming to the root, the labial surface is ground thin enough to burnish and fit over the tooth. Fig. 17. A thin veneer is fitted and held in position by the porcelain paste, carefully dried and fused in the furnace. The crown is now fitted in the mouth and requirements noted, such as proper size, shape and thickness, and just where more body is wanted. If the surface of veneer requires grinding it should be done at this stage, so that it

*Fig. 17.**Fig. 18.**Fig. 19.**Fig. 20.*

will be glazed again by the last heat. After final baking the platinum should be polished and the crown is ready for adjustment, using thin cement and very gentle tapping with a pine stick. The crown should fit easy, as there is danger of breaking the thin porcelain on sides of the crown, or even checking the veneer itself.

The joints are lapped and made as close as possible, so that great and repeated heating will not entirely destroy the solder: excess of solder will flow over the surface of the platinum, causing porosity and destroying the adhesion of the porcelain. The lingual surface is ground thin to give shape, so that there may be two flat surfaces to hold solder. When finished it gives the proper tooth contour. Fig. 18.

This crown has great possibilities and I will use one more illustration. A lady presented herself for treatment over nine years ago, having a malformed left lower incisor, Fig. 19. She had been to several prominent dentists and all said that nothing could be done; she finally was recommended to me and I corrected the deformity in one sitting by using the jacket crown, which she wore up to last year when the root loosened and exfoliated; then she came

back to me in great alarm, but too late, and now it is one of my specimens. You may examine it and note that the crown is in excellent order and good for twenty years, if the root had done its part. You will see by the diagram that natural space was too narrow for a normal appearing substitute. This I overcame by trimming the teeth on both sides, and I find upon examination that no harm was done in all those years. Fig. 20.—*Items, June, 1901.*

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SOCIAL CONSANGUINITY, NEAR KIN, EARLY AND LATE MARRIAGE. By Eugene S. Talbot, M.D., D.D.S. From the general principles of heredity elsewhere laid down, it must be obvious that the influence of intermarriage in families has been over-estimated as a factor per se in producing defect. The idea of the advantages of cross-breeding which seemingly appeared in the practice of exogamy (marriage outside the tribe, or more often outside those having the same totem or coat of arms) arose, as I have elsewhere shown, from observation of deformities following intermarriages contracted after the killing of girls for economic reasons has led to exogamy. The idea of incest was of religious origin rather than innate, since totemic relationship (which was chiefly prohibited) was far from being consanguineous. The totem was a mark indicating descent from a supposed animal ancestor endowed with occult powers. The children with the bear totem of one tribe could not marry those having the bear totem of any other tribe. From this practice sprang the medical, theologic, and legal notions anent the danger from marriages of consanguinity, which, as D. Hack Tuke remarks, insisted upon from time to time by medical writers, have been recognized by ecclesiastic authority, civil law and popular feeling. By ecclesiastic and civil law marriage of those very nearly related has been forbidden on other grounds than that of alleged danger to offspring. At the same time the justice of such laws receives support from medical observations, which tend to show that intermarriage may produce degeneracy, idiocy and insanity. I have elsewhere analyzed this evidence and shown that for the facts there is more than one explanation. The explanation pointed out by Strahan underlies the chief danger in intermarriages. With a perfectly healthy stock, remarks Strahan, "in-and-in breeding" may be practiced with impunity, but where the stock is tainted with disease or imperfection, safety is to be found only in "crossing."

The error of the old doctrine upon which was founded the prohibition of consanguineous unions lay, as Strahan remarks, not in asserting that disease and deformity were more met with in children of these than those of other unions, for such is the fact, but in attributing these unhappy results merely to parental blood kindred. Over and above the fact that these consanguineous marriages are almost certain to transmit, in an accentuated form, defect or tendency to disease already present in the family, there is no physiologic reason why such marriages should not take place. Breeders of prize stock frequently breed "in-and-in," not only with impunity but with marked benefit. But this fact, while going to prove that it is not the mere blood relationship of the parents which induces the degeneration too often found in the children of consanguineous marriages, can but rarely be advanced as an argument in support of the marriage of blood relations. The stockraiser permits only the more perfect members of his flock and herds to continue their kind. For this reason "in-and-in" breeding is innocuous, just as it would be in the human family under like conditions.

Recently acquired characters, whether physiologic or pathologic, are very liable to disappear when the individual bearing such characters intermarries with another not having the same character. The natural tendency in all such cases is to revert in the offspring to the normal or healthy type, so that, unless the new character be very deeply impressed upon the parental organism, it is almost certain it will not appear in the offspring if the other parent has nothing of the character. But when both parents are possessed of the character, whether it be physiologic or pathologic, this natural tendency to revert to the original is often overborne and the character is repeated in an accentuated form in the offspring.

Now this accentuation of family characters is what must always happen in the case of consanguineous marriages. If there be taint in the family each member will have inherited more or less of it from the common ancestor. Take the case of cousins the descendants of a common grandparent who was insane and of an insane stock. Here the cousins are certain to have inherited more or less of the insane diathesis. Even if the taint has been largely diluted in their case by the wise or more likely fortunate marriages of their blood-related parents, yet will they have inherited a certain tendency to nervous disease, and if they marry they must not be

surprised if that taint appear in aggravated form in their children. Some children of such parents are idiotic, epileptic, dumb or lymphatic, and the parents marvel whence came the imperfection. In some cases the parents and possibly grandparents of the unfortunate children have not displayed any obvious evidence of the tendency to disease which they have inherited and handed on to their descendants. Not looking farther back, the parents boldly assert that such a thing as insanity, epilepsy, scrofula, etc., is unknown to their family. They themselves have never been insane; why, then, should their children be? In like manner children may be epileptic, blind, deaf-mute, lymphatic, cancerous, criminal, drunkards, or deformed from direct inheritance, and yet the family line be honestly declared to be healthy. [Heredity consists in the transmission of sufficient hereditary potency to pass the inherited quality through intra and extrauterine periods of stress when certain functions and organs disappear to give way to others developing. At one of these periods the polyphyodont tendency gives way to the diphyodont. Through the influences of these periods of stress marked acquired defect becomes minor or *vice versa*. Through the period of stress the influence of benign or malign atavism is exerted.]

The truth of Sir William Aitken's maxim, that "a family history including less than three generations is useless and may even be misleading," is hence obvious. Similarity of temperament induced by a common environment, which Strahan calls "social consanguinity," is hence also a potent factor in the production of all hereditary degenerations. Living under similar customs, habits and surroundings, laboring at the same occupation, indulging in the same dissipation, tend to engender like diseases and degenerations irrespective of any blood relationship. Hence it not seldom happens that persons not even distantly related by blood are in reality much more nearly related in temperament than cousins or even nearer blood relations who have experienced widely different modes of life. This "social consanguinity" is the great curse which dogs every exclusive tribe and class and hurries them to extinction. It has largely aided real or family consanguinity in the production of the diseases and degenerations which have so heavily fallen upon the aristocracies and royal families of Europe. It appears likewise in the tendency of the neurotic to intermarry, popularly expressed in the proverb that "like clings to like." This likeness in mental

characteristics has been shown to be present by Roler, de Monteyel, Kiernan, Bannister, and Manning, so far as Germany, France, the United States, and Australia are concerned. Bannister puts the statistic proof of this tendency thus forcibly: "There are in Illinois, according to the most recent estimates in round numbers, about six thousand insane, or one to a little over five hundred of the population. Even if we double, treble or quadruple this frequency, to include all that have been or are to be insane, as well as those insane at the present time, it would not appear that there was much probability of two insane persons being married according to any ordinary law of chances. In fact, we find that in four out of the one hundred and four with insane heredity both father and mother had been insane. In one of these cases the insane heredity involved both parents and both grandparents on each side, though in the case of the latter the histories show it only as collateral. In the cases of the three patients with direct paternal and collateral maternal heredity, two had also direct maternal and collateral paternal heredity, and in one case there was collateral heredity of insanity on both sides. This makes altogether ten per cent of those with insane heredity, with it on both sides, maternal and paternal, and thus favored with a double opportunity to inherit mental disease. If to this be added the instances where with insanity of one parent there is either epilepsy, hysteria, drunkenness, brain disease, nervousness, etc., of the other, the ratio of double inheritance rises to over twenty per cent."

Since jaws and face are transitory structures, but relatively little taint is needed in a family or community to cause suppressive or hypertrophic degeneration of the face and jaws and irregularities of the teeth. The influence of this factor of these neurotic and "social consanguinity" tendencies in the production of deformities of the face and jaws and irregularities of the teeth cannot well be overestimated. A test of these deformities is alleged to exist in the Polynesian populations of the Pacific Islands, where race admixture can be excluded for a relatively long period. Concerning the ancient Hawaiians, J. M. Whitney remarks: "Here is a people isolated from all others for at least fourteen hundred years, with no admixture of races, yet irregularity of the teeth of both maxillæ is almost as common as it is among the mixed races of to-day." In social consanguinity of the Polynesians must be peculiarly

reckoned their excessive and systematized licentiousness, shown in societies for the practice of extreme sexual indulgence like the Areoi. Such societies would undoubtedly create neurotic states and tendencies and produce more marked degeneracy of the face, jaws and teeth than intermixture of race or consanguineous marriage. The factors of race admixture cannot, as Denniker has shown, be completely excluded from consideration among the ancient Hawaiians. Since leprosy, like syphilis, may simply check development without causing infection *in utero*, this factor has likewise to be taken into consideration. Furthermore, Alvarez of Wailu, Dahu, has shown that mortality among Hawaiian babies is very large. Hygiene is practically unknown to the mothers. Kava-kava (the fermented juice of the awa) is the great medicinal agent of the medicine-man, who is the chief medical resource of the natives. Syphilis is very common, especially the non-venereal type. The habits of the natives aid the spread of the disease. Under such conditions irregularities must result.

Among the factors interfering with the proper development of the child is the condition of the mother at the time of impregnation and during pregnancy. Age at pregnancy, exposure to improper diet, to narcotics, and to the toxic occupations, all play a part in checking fetal development. So, likewise, do frequently repeated pregnancies. The age of the mother at pregnancy is too much ignored in dealing with defects. J. Mathews Duncan pointed out nearly two decades ago that the offspring of early and senile marriages were defective. Multiple and too nearly repeated pregnancies were of frequent occurrence. Conger (whose results were later corroborated by Joseph Workman and Kiernan) points out that in all degenerative forms age of the parent must be taken into consideration, since it alone often determines degeneracy. Conger found that the age of the mothers of degenerates is below twenty-five years. Korosi, in an investigation of the influence of the age of parents on the vitality of children, found that the proportion of deaths among children from unhealthy constitutions or maladies traceable to the mother was twice as large among the children of mothers under twenty as among the children of mothers over thirty. The healthiest offspring were born of mothers between twenty and thirty united to husbands between thirty and forty. Where either husband or wife was under twenty the offspring usually proved

weakly. This is particularly the case even in Hungary, where the girls become women at thirteen. In that country in five per cent of the number of marriages the brides are under twenty years of age.

Marro finds that among all classes of criminals there is an excess of immature parents (under twenty-five) or senile parents (over forty-two). It is a well-known experience that children of the aged readily show degenerate types. Arthur Mitchell and Langdon Down have recognized the influence of premature and late marriages in the production of idiocy. Factors capable of producing idiocy may arrest fetal development at all stages. Kiernan has had under observation a Nova Scotian family of Scotch extraction, the mother of which continued to bear children until she was sixty-three years old. There had been no pregnancy between fifty and fifty-six. At fifty-six a son was born who had ear, jaw and skull stigmata, and became a periodical lunatic at twenty-five. A son born a year after was a six-fingered idiot with retinitis pigmentosa. Three of the next children were paralytic idiots in infancy. One of the next children was a periodical sexual invert female. The last child was an epileptic. The children born before the age of fifty were normal and averaged sixty years of age.—*International, May, 1901.*

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CYST ARISING FROM THE ROOT OF A LIVING TOOTH.

By Mr. Ernest B. Dowsett, London. The patient, a female, aged 32, when she presented herself to me, gave the following history: Eleven months previous she had pain in the left side of lower jaw. The patient says the bone began to swell from that time in the region of the second bicuspid and gradually increased in size. She never had any acute symptoms. When seen and examined there was a hard, uniform swelling of the lower jaw, expanding the outer plate of the mandible and filling up the buccal sulcus from the second molar behind to the first bicuspid in front. There was no egg-shell crackling over any part, nor any softened area. The second bicuspid was very much tilted, so as to be lying along the alveolus, with its crown pointing *forwards*, and the patient states that it was not always in this position. The first molar was missing, having been extracted fifteen years previous. Both the bicuspids and the second molar were living teeth, giving the ordinary reaction to a hot burnisher. A skiagraph showed absence of any buried roots of the first molar, from which a dental cyst might be

arising, and also absence of any non-erupted supernumerary which might have been causing a dentigerous cyst. A dental cyst arising from the second bicuspid was therefore diagnosed.

Subsequently the patient was anesthetised and the second bicuspid removed. The shallow socket was found to be in direct continuity with the cyst cavity. Some of the alveolus was cut away and a large piece of the outer wall. The rest of the cyst was scraped and packed in the ordinary way. The cavity was completely healed up in about six months. The cyst contained a light yellow fluid with abundance of cholestrin crystals. Microscopical examination of the cyst wall showed it to be *epithelial*. The tooth showed a well marked flattened facet on the side of root directed downwards from which the cyst arose, the facet apparently being formed by absorption and deposition of cementum.

The point of great interest in this case is the fact of the tooth being *alive* when the cyst arose. In all written accounts of dental cysts it is *invariably* stated that they arise from the roots of dead teeth, and that they are stimulated to growth by some chemical or bacterial irritant passing by the apical foramen. No such stimulant could have been present here. Its probable pathology seems to be a cyst originating from one of the epithelial remnants, as described by Malassez, and so commonly found microscopically in the alveolo-dental membrane, and not stimulated to activity by some irritant from the pulp-canal.

Discussion. *Mr. Albert* wished to know whether there was any history of an inflammatory attack prior to the appearance of the cyst. He had always taken the ordinary cyst to be a chronic inflammatory cyst filled up with serous fluid and cholesterin. He thought *Mr. Turner* described the origin of the cyst as epithelial, but he was not aware that that was universally admitted. He pointed out that *Mr. Eve's* multilocular system of tumor was akin rather to the single cyst. The difference lay in the presence of cholesterin in the latter and its absence in the former. He believed it was supposed to have an origin in some growth which had undergone some fatty change in its contents. Bearing in mind the occurrence of acute alveolar abscess with living pulps, and the probable inflammatory origin of the dental cyst, might not the antecedents of the case described be found in an alveolar abscess, in which the pulp has not succumbed?

Mr. J. G. Turner thought that when a man saw 40 consecutive cases and found epithelium in every one of them, it might be taken as a fact that they were epithelial cysts. The question asked by *Mr. Albert* was the very one he wished to ask himself. There was no need to suppose that the cyst was one of spontaneous origin—an original sin sort of cyst. He had been able to examine a case in which a dental cyst arose as a consequence of the irritation of chronic pyorrhea alveolaris. The right lower bicuspid was so far affected that a fine bristle could be passed up to their apices; both teeth were living, but there was a dental cyst below the first bicuspid. The microscopic section showed well-marked epithelium, and that might be the origin of *Mr. Dowsett's* case. There was, however, a possibility that it was really due to the molar that was taken away. He had operated on a cyst at least fifteen years after the molar had been taken away, because that cyst suddenly took upon itself to suppurate and the patient would not put up with it any longer. The model inclined him to think that the most prominent part of the cyst was opposite the gap whence the tooth had been removed, and the inclination of the bicuspid would be accounted for readily enough by the enlargement of the cyst.

Mr. F. J. Bennett said it seemed strange to him that one should always expect that if epithelial remnants remained in connection with the roots of teeth, it should always be necessary to assume some special form of irritation from a dead suppurating root, or from pyorrhea, or from injury in taking out another tooth. It seemed to him conceivable that the mere presence of the epithelium might be sufficient by degeneration to form some colloid or cystic fluid which by increasing might assume the proportions that had been described. *Mr. Eve* had described the formation of multilocular epithelial cysts and tumors. The explanation he gave of the epithelial cells swelling up and undergoing degeneration into a fluid condition seemed to be parallel to the cases which had sometimes been described in connection with the roots. The case mentioned by *Mr. Dowsett*, in which there appeared to be no dead pulp, seemed to warrant the idea that in some cases there might be spontaneous enlargements of the cysts by the mere degeneration of the epithelium which has been left.

Mr. J. G. Turner, answering *Mr. Bennett*, said that colloid degeneration was not growth, and there must be growth in order to

have enough degeneration to make a cyst. When in examination an irritant was always found, one could not shut one's eyes to the fact, and he did not see why it should not be thought that the etiology of that tumor, at any rate, was being cleared up, and that perhaps on the same lines the etiology of other tumors might also be cleared up. It could not be denied that anything might grow in the body to double the size, but it could be pretty confidently stated that this was not a case of spontaneous enlargement. Epithelial remnants were very common in all parts of the mouth, but the only case he could recall where he thought that one enlarged spontaneously was in a cyst of the tongue, which it did not seem to him arose in the center line, but in which there was a cyst deep in the tongue and which eventually suppurated. He did not think the argument about cholesterin was of great value. He was not sure that cholesterin was undescribed, or even if undescribed would not be found in a multilocular cystic tumor. It was known of cholesterin that it was the product of epithelial or endothelial degeneration. Cholesterin formed the greater part of the pus-like fluid found in the very minute dental cysts. He certainly thought, with Mr. Bennett, that the two tumors were akin. It was possible to find in the wall of a simple epithelial cyst very small loculi, some with distinct spaces in them. At other times a considerable number of loculi were found, giving a regular sponge-work of spaces in the wall. Apparently one piece had enlarged and pushed the others to the side, and that was exactly what one would expect from looking at the early sections. These, too, were what it might be imagined an early section of a multilocular epithelial cystic tumor would be.

Mr. E. B. Dowsett said there was absolutely no history of inflammation since the time of the first molar being removed, fifteen years previous. The patient first noticed the swelling, and as the swelling increased the pain started. He thought it might be taken that multilocular cysts and dental cysts were similar in origin, both being epithelial, but they were certainly of a different mode of growth. The fact mentioned by Mr. Albert of the dental cyst having an abundance of cholesterin, while the multilocular cystic tumor had none, was fair evidence that they must be quite distinct in their mode of growth. With regard to the question of the first molar, he thought if it could possibly have arisen from that the

bicuspid would have been certainly pushed in the opposite direction. Comparing the tooth and the model, it would be seen that the facet was distinctly facing downwards and forwards. The exostosis of the root was accounted for by the trouble that the cyst set up after it had started to grow. He agreed with Mr. Turner that it was not necessarily a question of degeneration, and he thought at present that degeneration had nothing to do with the origin; he thought it was quite a secondary matter. It seemed to him that there was nothing to prevent an epithelial cell starting to grow spontaneously. There was no reason why the cells should not multiply without any irritant whatever. If a sarcomatous growth in the body might arise spontaneously there was no reason why an ordinary dental cyst should not arise from one or two small epithelial cells that had been left behind.—*Dental Record, March, 1901.*

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RELATIVE EFFECT OF A COMMON ENVIRONMENT UPON ENAMEL. By F. L. Bogue, M.D., D.D.S., New York. Read before the N. Y. Institute of Stomatology, Feb. 5, 1901. Dr. Black, in his paper upon "The Physical Characters of the Human Teeth," confined his experiments to and derived his conclusions from a study of the dentin. As teeth are more or less perfectly covered with enamel, and until this is penetrated the dentin is not attacked, it seemed fitting that some experiments should be made upon this important structure to ascertain if it were responsible for the apparent differences between Dr. Black's conclusions and those held by the profession up to that time, which were based principally upon more or less careful clinical observation.

That environment has a greater bearing on the liability to decay, and that the physical and chemical properties of the teeth of different individuals are more nearly alike than had ever been appreciated before, I think is perfectly true, but that the rapidity of decay is entirely dependent upon the environment, and that the physical and chemical structure of the teeth has no bearing, I think has not been adequately proved. Clinically we sometimes discover a well-defined cavity in the approximal surface of a tooth, while the adjoining tooth is in perfect condition. These teeth have been exposed to the same environment; how do we account for the greater resistance shown by one of them? If teeth in the same mouth show differences in the amount of resistance, is it not natural to suppose

that there may be even greater differences in teeth taken from various individuals? There are also deviations from the normal forms of teeth, due to interrupted development, sequelæ of some special disease, such as measles or syphilis. Are teeth of that character, aside from their defective mechanical structure, no more prone to decalcification than perfectly normal teeth?

According to Mr. Tomes, the microscope shows that "the tissues are not only deficient in quantity, but they are defective also in quality. The elements of the enamel are imperfectly combined, hence the tissue is porous, yellow, opaque, and very fragile." If it were possible to have a common environment and teeth of exactly the same chemical composition, there would still be differences in the degree of disintegration depending upon what we term predisposing causes—i. e., 1, regularity or irregularity of the teeth; 2, differences in individual shape of the teeth and their location as regards the salivary ducts; 3, variations in the thickness of the enamel-cap, and differences in its mechanical structure, whether without blemish and fused at the bottom of the sulci or, on the other hand, having pits and grooves in the surface and defective sulci extending entirely through the enamel into the dentin.

These predisposing causes naturally should be eliminated so far as possible in experiments which are intended to show the comparative resistance of different specimens of enamel in the presence of a common decalcifying agent. To accomplish this the teeth were covered with wax except for that portion of the surface which was to be exposed to the action of the solution. The experiment tried was the production of artificial decay on a number of teeth so prepared, in a mixture of bread and saliva, to ascertain if the rate of decalcification was uniform in the different specimens. The mixture of bread and saliva was the only medium used in the experiments reported this evening, and was chosen first as being the least unpleasant. During the process the teeth were kept at the temperature of the body in a small water oven, the gas flame warming it being controlled by a thermostat.

The first time seven bottles of the solution, each containing ten teeth, are kept in the oven for two months. As often as was necessary to keep them well covered more of the solution was added. At the end of this time the teeth were removed and carefully examined, and it was found that there were differences in the amount of

decalcification. After finding these variations it was thought possible that the environment might have been different in the several bottles, so it was decided to repeat the experiment, placing the teeth in a single vessel. Also, as further investigations were to be made, it was necessary to examine them to determine their condition—whether the pulp was alive or dead, whether they were decayed or sound, etc., and to number them so that they might be kept track of during the work. The second time one hundred teeth were used and treated in the same way as the first, except that they were all placed in one vessel. At the end of two months these were removed and examined, and again differences were found in the amount of decalcification.

To determine more accurately the relative degree of decalcification in the different specimens, fifty blocks of enamel were cut from them and the edges filed down until they were all of equal weight (twenty milligrammes). These were exposed to the action of the solution for six weeks. They were then removed and reweighed with the following results: nine weighed eight to eight and one-half milligrammes each; eight, eight and one-half to nine and one-half; sixteen, nine and one-half to ten and one-half; nine, ten and one-half to eleven and one-half; six, eleven and one-half to twelve and one-half. In other words, nine specimens lost between eleven and one-half and twelve milligrammes in weight; eight lost between eleven and one-half and ten and one-half; sixteen lost between ten and one-half and nine and one-half; nine lost between nine and one-half and eight and one-half; and six lost between eight and one-half and seven and one-half milligrammes.

Twenty-five more specimens were cut, each weighing fourteen milligrammes, and were exposed to the solution for two weeks, with the following results: two weighed 13.9 milligrammes each; five weighed thirteen milligrammes each; three weighed 12.9 milligrammes each; three weighed 12.1 milligrammes each; six weighed twelve milligrammes each; three weighed 11.6 milligrammes each; three weighed 11.2 milligrammes each.

The relative specific gravity of the enamel of these teeth was determined to see if there was any relation between the density of the enamel and its liability to decalcification. While the differences in the relative density were rather greater than those found by Dr. Black in his investigations on the dentin, the variations found do

not seem to have any fixed relation to the amount of decalcification so far as I can see at present.

Of course these results are by no means conclusive, as but a single environment was used throughout, and until sound portions of these teeth have been exposed to other environment and differences shown in every instance, it cannot be stated positively that factors other than environment have a bearing on the rapidity of decalcification, but I think it may reasonably be said that the question is an open one.—*International, May, 1901.*

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REFLEX AURAL SYMPTOMS DEPENDENT UPON DENTAL CARIES. By E. B. Dench, M.D., New York. Read before the N. Y. Odontological Society, Nov. 20, 1900. The intimate relation between dental caries and certain general diseases, such as diabetes, is well known. No member of this audience would think for an instant of treating a case of extensive or progressive dental caries without first inquiring as to whether or not the patient were diabetic. In other words, the odontologist must be a medical practitioner before he can conscientiously and efficiently practice his specialty. I now beg to call your attention to the reverse condition; that is, to symptoms produced in other regions of the body by diseased teeth. From a somewhat extended clinical experience I have made it a rule to examine the teeth in every case applying to me for relief from otalgia, tinnitus aurium, or progressive impairment of the hearing. When we consider the intimate relation that exists between the innervation of the organ of hearing and the dental apparatus, it can be easily understood that any pathological condition in the one apparatus may cause symptoms referable to the other. The entire sensory innervation of the ear is derived from the fifth or trigeminal nerve; this nerve, through its superior and inferior maxillary branches, is the sensory nerve of the teeth. If we bear in mind the extensive ganglionic communications of the fifth nerve through Meckel's ganglion and the otic ganglion, both with the other sensory nerves and with the sympathetic nervous system, it will be easy to understand how any disturbance in the domain of one of the branches of the nerve may cause symptoms referred to some remote organ. In other words, dental caries may cause a series of reflex symptoms referred to other organs of the body more or less remote. The simplest of these reflex phenomena

is otalgia or pain in the ear. Both from personal observation (I have a bad lower molar) and from clinical experience I find that a carious tooth may produce all the symptoms of an acute inflammation within the tympanum.

In our otological clinics earache is one of the most common symptoms of which patients complain. I make it an invariable rule, after examining the ear, to look into the mouth and see if there are any diseased teeth. Naturally, if the otoscopic examination reveals the presence of an acute inflammation, either in the external auditory canal or the middle ear, the cause of the otalgia is perfectly evident. In a large number of cases, however, especially in children, we find that the patient complains of a severe earache. An examination reveals the external auditory canal perfectly normal; the drum membrane is found to be normal in position, natural in color, and presenting absolutely no evidence of any inflammatory process within the middle ear. In spite of this the patient is suffering from otalgia or pain referred to the ear. In numerous cases of this character examination of the mouth has revealed carious teeth. In adult patients usually one of the third molars is at fault, but in children the symptom is not infrequently a result of caries of the first molar.

I do not believe that the process of dentition itself can produce pain of this character. Dentition is a perfectly physiological process, and many of the diseases of childhood formerly attributed to dentition have since been found to be due to some actual disease either of the *primæ viæ* or of some portion of the upper air tract. The restlessness of children during the period of dentition, with the continual crying at night, as if suffering from severe pain, has been proven to be due in a very large majority of cases to acute inflammation of the middle ear. These cases are always attended by fever, the temperature sometimes running very high. As before stated, dentition is a perfectly physiological process, and is unattended by any rise in temperature. Fever is therefore an indication that the cause of pain is not due to eruption of the teeth.

Now for this other class of cases to which I desire to call attention (that is, those in which there is severe pain, no rise of temperature, and no evidences of any inflammatory process within the ear, although the patient complains of severe earache). This series of symptoms is found in older children and adults and not in infants.

This pain, as before stated, is frequently due to a diseased tooth, and the patient is really suffering from toothache, although the pain is referred to the ear. In this connection it might not be out of place to mention that the old housewives' remedy for toothache was the introduction of some counter-irritant into the external auditory canal. It seems as if these ladies could occasionally teach the medical profession something about reflex phenomena.

I have spoken only of cases of pronounced otalgia. These, as before stated, are frequently found in older children and sometimes in adults. In adult life, however, the symptoms are often more complicated. The patient may complain of a feeling of oppression, stuffiness and pressure in one or the other ear. This symptom may be intermittent, and while not amounting to actual pain, may cause considerable discomfort. Examination made by means of the speculum will reveal nothing abnormal, or at most a slight retraction of the drum membrane. On inflating the ear by means of the Eustachian catheter the Eustachian tube will be found to be slightly narrowed. At first thought it would seem as though the local condition found in the tube might be sufficient to account for the sense of discomfort in the ear; further investigation, however, will demonstrate that the relief of the tubal narrowing does not cause the pain to disappear. We next examine the mouth. A carious tooth is found, and when it is either extracted or properly treated all aural symptoms disappear. Cases of this kind have been so frequently seen that I have made it a rule to examine the teeth in all cases either of otalgia or of what may be called aural discomfort, where the cause of the pain could not be directly traced to an acute inflammatory condition either of the external meatus or of the middle ear. It is a well-known fact that one of the earliest symptoms of cancer of the larynx is earache. Here the pain is reflex in character and depends upon the intimate relation which exists between the innervation of the larynx and that of the external auditory canal and of the middle ear. It would be as culpable to overlook the etiological condition dependent upon malignant diseases of the larynx as to overlook the same condition due to dental caries. The otologist would be as little excusable for neglecting the examination of the teeth in the one case as the examination of the larynx in the other.

Another subject which deserves attention is the possible effect

which dental caries may exercise upon the trophic nerves of the tympanum. Speaking in the broad sense, we know that any interference with the nervous apparatus of any portion of the body may lead to pronounced local manifestations, due to malnutrition of the tissues. Thus in the disease commonly known as "shingles," or technically as *Herpes zoster*, there is a neuritis of the intercostal nerves. In this disease we find a cutaneous eruption following the course of these nerves. In other words, the branches of the intercostal nerves affected preside over the nutrition of the integument along the course of their distribution. Interference with their function causes an eruption over the area which they supply, due to malnutrition of the tissues. Reasoning from analogy, it seems more than probable that a carious tooth may so affect the nerve supply of the middle ear as to cause tissue changes within the mucous membrane of the tympanum. These tissue changes may result either in an impairment of hearing or a perversion of the function of the ear; that is, they may cause tinnitus aurium or vertigo. In cases of impaired audition of long standing, or in any patient suffering from severe tinnitus, I never fail to examine the teeth in the hope of finding a possible cause of aural symptoms. I am not prepared to state that carious teeth are responsible for actual tissue changes in the middle ear, but I am perfectly willing to assert that no otologist does his full duty to his patient unless he excludes such possible causes of aural symptoms. Aside from actual tissue changes occurring within the middle ear as a result of dental caries, it is quite logical to suppose that the vaso-motor nerves, not only of the middle ear, but also of the labyrinth, may be influenced materially by caries of the teeth. Following this course of reasoning, it would be wise to examine the teeth in all cases of intermittent tinnitus, or in cases where the power of audition is occasionally reduced without apparent cause. The vaso-motor nerves, not only of the middle ear, but of the labyrinth itself, are in such intimate relation with the middle and inferior branches of the trigeminal nerve that a pathological condition of one portion of the nerve might cause circulatory disturbances in some remote region. In other words, carious teeth might cause a dilatation either of the labyrinthine or of the tympanic vessels, producing either impairment of audition or the perversion of the auditory function; that is, tinnitus.

I do not believe that dental caries can in any way cause an acute inflammatory process of the middle ear by reflex action. It is quite possible that carious teeth may cause middle-ear inflammation, either directly, by introduction of germs into the tympanum through the Eustachian tube, or indirectly through infection of accessory sinuses of nose. Such an inflammation would not, however, come within the limits of this paper.—*Cosmos, June, 1901.*

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SOME OBSERVATIONS ON THE MOTIONS OF THE MANDIBLE. By Messrs. Charles Tomes, F.R.S., and W. H. Dolamore. The authors described the peculiarities of the temporomandibular articulation, drawing particular attention to the movements of the inter-articular cartilage and its relation to the condyle and the temporal bone, and showing that the resultant movement of the entire jaw is compounded of sliding and circular motions, and that the mandible in opening moves approximately in the arc of a circle.

The first step of their enquiry was the examination of the forms of the glenoid cavity and of the eminentia articularis in a number of skulls. The skulls referred to in the paper are those of the baboon, the howling monkey (*Mycetes*), the aye-aye, the chimpanzee, the orang and the gorilla; also a large number of human skulls, ranging from those of Australian blacks to European skulls. The authors found that the articular surface even in the highest monkeys has a far flatter surface than that of man. The strong curves of the human articulation have been gradually acquired. In man there are two conspicuous differences from even the highest of the apes, namely, the antero-posterior shortening of the jaw and the complete assumption of the upright position. Both of these factors tend to leave less room for the hyo-laryngeal apparatus when the mouth is widely opened. And the complex form of the articulation, which has the effect of carrying the jaw forward as it opens, gives so much more room, and in this way is an adaptation—hitherto it is believed unnoticed—to the upright position. In European skulls the variations in size and shapes of the articular surface are very considerable, the size and shape of the condyles are even more variable, therefore the movements of the mandible must necessarily vary in different individuals.

The authors described at length their methods of investigating the

actual movements of the mandible during opening and closing of the mouth. Measurements were also taken upon a wet specimen, in which all the soft parts had been removed with the exception of the ligaments of the joint. On the tracings in general the paths described nearly coincide with the circumference of a circle; curves taken from any one individual differ slightly, but when the movements are made rapidly the results are more consistent and the paths less curved. The line drawn in closure never corresponds with that drawn in opening, only coming to coincidence again at complete closure; as a rule the closing track passes in front of that of opening. The authors draw attention at length to certain facts which may account for this. Another feature common to many of the tracings is a sort of step or several steps near to the top of the closure curves, as if the muscular sense had appreciated that the jaw was too far forward and set to work to correct it.

The authors sum up their conclusions as follows: 1. The mandible in opening moves approximately in the arc of a circle. 2. The center of this circle is always below the level of the condyle, generally from an inch to an inch and a-half. Its radius may be no greater than the length of the jaw, but commonly exceeds it, the center being usually considerably behind the condyle. 3. The path described is coincident with that of a simple rotation round a stationary condyle only at its start and its completion, and diverges forwards as it descends. 4. The paths described in opening and in closing are never coincident, but the amount of their divergence is variable. The closure path usually lies in front of the opening path. 5. The size and shape of the glenoid fossa and of the eminentia articularis vary much in well-developed European skulls; hence the paths described are not and cannot be identical in different individuals. 6. Whilst the form of the articulation stamps a similarity upon tracings taken from the same individual, the laxity of ligaments and varying pull of different muscles allow of some latitude in the path pursued. 7. The form of the articular surface is in a measure peculiar to man, being nearly approached by the gorilla and howling monkey.—*Dental Record, June, 1901.*

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ALPHABETICAL DIET. We reproduce the following as a bit of literary dessert, from the columns of the *New York Times*:

"Got anything here beginning with a 'K' that's good to eat?"

inquired a new customer in a Sixth avenue grocery-store and meat-market the other day. "How would pickled kidneys answer?" replied the clerk, after a moment's thought, "or, maybe, a mess of kale—" "Say no more," interrupted the strange patron enthusiastically, as he fervidly wiped the band of his hat with his handkerchief. "Give me a dozen cans of pickled kidneys and a basketful of kale. The kitten's life is saved. I told my wife when I left home this morning that if I failed to send home a kangaroo, dead or alive, before 2 o'clock, I should expect to find the kitten served for dinner in the latest Chinese style. But your happy thought has saved her."

In reply to the pitying glances of the grocer's assistant, the peculiar customer went on to explain himself. You see, we all got tired eating the same things day after day, and I got into one of those fool arguments with my wife about the domestic and culinary arrangements, and it led up to the alleged difficulty experienced by housewives in thinking up what to have for dinner. My wife took the ground that the mere matter of deciding from day to day what to put on the table was a downright wear and tear on a woman's system. The statement made me tired, and I said so, at the same time calling attention to the fact that in this city there are vast hordes of people whose principal daily cause for anxiety is whether they will have anything at all to eat. I took such high moral grounds and went on at such a rate that my wife threatened to cry about it, and said she just wished I would do the marketing for about a month, and I'd soon change my tune.

"Well, the upshot of it all was that I agreed to do the marketing myself for a few weeks. I became reckless and went further. I agreed, just to show how easy the thing was, that we would begin and eat up (or rather down) the alphabet, taking one letter a day, with bread, potatoes, tea and coffee thrown in as staples. Furthermore, I agreed that if I didn't succeed I'd buy a new piano for the front parlor. And say," continued the customer, confidentially, as he settled himself on a barrel of cabbages and took a pinch of sauerkraut out of an open cask, "between you and I, I'm rather glad I left that staple clause in the agreement.

"Well, I inaugurated the dietary system with a bill of fare which, although bountiful, was to a certain extent vegetarian. We had apples in many forms, apricots, pickled asparagus, artichokes,

almonds and the staples. The next day's menu was considerably more substantial, consisting of beef, beans, black bass, bacon, biscuit, bluefish, buttermilk, beets, bon bons, butter and batter cakes. My wife and family protested that the dinner lacked homogeneity, so to speak, and bordered on the erratic, but this was just what I was striving for. Originality, I declared, was my watchword.

"The next day was even better. We fairly rioted on chicken, cucumbers, codfish balls, celery, curry, clams, cheese, cauliflower, crabs, cabbage, cake, carrots, crullers, canned currents, crackers, caviar, corn, canned cherries, consommé, catsup, calf's head and candy. It looked like a cinch for me. My wife hinted at dyspepsia and indigestion, but I retorted that she was envious.

"We calmed down a little the next day, partaking of roast duck, doughnuts and dumplings. We made a regular Easter of the next day with eggs in every conceivable form. I added variety with a dish of egg-plant and a liberal allowance of fried eels, so that after all it was really a variegated menu.

"On the following day I wanted to make a regular fish day of it, but my wife arose to a point of order. She pointed to the fact that we had already exhausted a portion of the fish family in the way of codfish balls, bluefish, eels, crabs and the like, and that under the rules I couldn't go ahead and spring the whole piscatorial connection on her during one day and then be coming along with scattered tribes afterwards. So I got along with baked flounder, frogs' legs fritters, finnan haddie and Frankfurters. It was a weird and lonely sort of day. I was beginning to feel the need of vegetables, and I had tried on this day to sneak in with a few mushrooms under the head of 'fungi,' but my wife sprung the rules on me again. She said mushrooms were mushrooms. She was afraid that under the letter 'M' I might want to send around the entire contents of a butcher's shop under the head of 'meats.'

"Next day brought the scurvy nearer to our door. But as for meats, we were very well supplied. There was roast goose, broiled grouse and baked guinea hen with gooseberry sauce and grape fruit. The succeeding day began to tell on me, owing to the vegetable famine. Our meals were provocative of extreme thirst, consisting of ham, hominy hoe cakes, herrings and many different kinds of hash.

"I realized, however, that my troubles were just beginning when I tackled the 'I' menu. I thought over the 'I' problem for two

days beforehand, and offered a prize of \$3 in four groceries and meat-markets in the neighborhood for an edible dish under this head, but all in vain. One man told me that in South America the natives roasted the succulent flesh of the iguana and devoured it with a relish, but I could not procure an iguana in time for dinner. A learned friend of mine told me that 'inconnu' was but another name for the fish of the salmon family. Oh, with what a light heart I told my wife that we would have a nice salmon for dinner, but that aggravating woman wouldn't hear to it. A salmon was simply a salmon, she said, and certainly came under the letter 'S' or not at all, so on that day we breakfasted, dined and supped on ice cream and the ever faithful staples.

"And yesterday was also a day of desserts. We had jellies of every conceivable flavor, color and consistency, and as an offset to this we had jam. It was the best I could do, and I was about to lose heart. It was a gray day indeed.

"But to-day your happy kidney and kale suggestion saves us from starvation, and to-morrow—ah! to-morrow we will make a feast of it indeed. We will luxuriate on liver, lamb, lobster, lettuce, lentils and leeks, and anything else you can think of in the eating line that begins with 'L,' just send it around. And, oh, please help me to look ahead to the 'X' and 'Z' menus. I'll try and get hold of a zebra by that time, but as for 'X,' I'm afraid I'm up against it there.

"A queer thing about my new food departure is the number of things it has led us to put into our mouths that we have never thought of before. But say, don't you ever advise anybody to tackle this problem."

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FORMATION OF THE VOICE AND SPEECH. By Dr. G. A. Ronssel. Read before the American Dental Club, of Paris, Jan 6, 1901. The human voice is produced by the thin membranous folds each side of the larynx, called vocal cords, being thrown into vibration by a blast of air from below, this vibration being communicated to the air in the chambers and passages above. The variation in vocal sounds which gives rise to speech is not produced in the larynx, but in the throat, mouth and nose. When the blast of air is thus modified, but not accompanied by any vocal sound, it gives rise to a whisper (this is what I am going to show you later on), but when

a vocal tone is produced at the same time we have the ordinary speaking aloud. As vocal tones can be produced only by expiration, we can speak aloud only by means of an expiratory current of air; but a whisper may be produced by an inspiratory as well as by an expiratory current.

Speech is composed of two kinds of sounds; those which must be accompanied by vocal tones are called "vowels"; the others do not need any vocal tone, but are produced by changes in the shape of the resonating chambers, and are called "consonants." As the pronunciation of the consonants is always accompanied by some vowel sound, and as the difference between the vowels is brought about by changes in the shape of the mouth, the distinction between the two sets of sounds is rather artificial than real. The production of the different vowel sounds depends upon such change being brought about in the shape of the mouth, so far as cavity and aperture are concerned, that a "resonator" with a different individual note is formed for each particular vowel.

The sounds called consonants are caused by some check or impediment in the course of the blast of air coming from the air passages. Yeo classifies these sounds according to the part at which the obstruction occurs: 1. *Labial*, when the narrowing takes place at the lips, as in pronouncing *b, p, f, v*. 2. *Dental*, when the tongue obstructs when pressed against the hard palate or the teeth, as in pronouncing *d, s, l*. 3. *Guttural*, when the posterior part of the tongue moves toward the soft palate or pharynx, as in pronouncing *k, g, ch, r*. Yeo also divides the consonants into different groups, according to the kind of movements that produce them: 1. *Explosives* are produced by the sudden removal of the obstruction, as with *p, d, k*. 2. *Aspirates* are continuous sounds caused by the passage of a current of air through a narrow opening, which may be at the lips as with *f*, at the teeth as with *s*, or at the throat with *ch*. 3. *Resonants* are the sounds requiring some resonance of the vocal cords, while the air current is suddenly checked by closure of the lips as in *m*, or closure of the dental aperture as in *n* or *ng*. 4. *Vibratory*, of which *z* is the example, requiring a peculiar vibration of the vocal cords while either the dental or the guttural aperture is partially closed.

To see what is going on in the mouth during speech I have taken the impression of the mouth with the lower jaw, the tongue and

the lips in the position they assume when the different sounds are pronounced. The method of taking the impressions is as follows, as practiced upon myself: A correct measurement is first obtained of the height of the opening of the jaw during the pronunciation of a certain vowel (*a* for instance), and a block of wood of the corresponding length is prepared, which is placed between the teeth at the moment of taking the impression, a large piece of very soft modeling composition being used for this purpose. While in this position, with the wax still very soft, I pronounced the vowel *a*, and thus obtained an impression of my buccal cavity when articulating that sound. After cooling off the wax with cold water I was able to remove the impression; then I ran the plaster cast, articulating the upper and the lower parts together and covering the whole with plaster, leaving a hole in front corresponding to the labial opening, and one underneath for the air passage corresponding to the larynx. I had thus a model of the cavity of the mouth during the production of the vowel *a*. When a continuous blast of air (a pressure equal to a column of mercury seven centimeters in height being sufficient) was passed through that resonator (plaster model) we found that the sound produced was the same as if *a* had been whispered. We now had to see if the sound which was the same to the ear was theoretically the same. There are two ways of recording the sounds of the voice, or rather the vibration which produces these sounds. One is by a tracing, or series of curves similar to the pulse trace and by an instrument similar in principle to the sphygmograph, the current of air issuing from the larynx setting into vibration a diaphragm which communicates with a recording needle. The other, which was the method adopted by us, is by the flames of Koenig. The deflection of a flame continuously photographed in series gives a constant series of deviations for a given sound. We can thus by either method analyze the results obtained and extract by calculation the simple sounds that have formed the curve (this is what I. Hermann did, and so artificially decomposed the vocal apparatus into its elements) so as to know the part played by each.

Having reproduced, as indicated above, as nearly as possible the buccal cavity, a blast of air passed through the same (or the resonator) and directed upon the membrane of the manometric capsule, whose flame was photographed after the ordinary method, the result

was identical with that obtained directly from the living subject. The results, however, are not the same with all our models made under the same conditions. We have obtained notes which differ half a tone, and yet a continuous current of air produces the same vowel. This demonstrates what Dr. Marege has said, "The vocable—that is to say, the note produced by the buccal resonator—is not alike for the same vowel and the same person." Deaf and dumb children in the beginning of their education always pronounce each vowel on the same note that the buccal resonator gives.

In conclusion: A continuous current of air becomes interrupted in passing through the buccal cavity, and this resonator alone suffices to produce the whispered vowel. The vowel becomes sonorous if the current of air has just passed through a reed instrument, to which the vocal cords correspond.—*Cosmos*, June, 1901.

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POINTERS. By Stewart J. Spence, D.D.S. *To wax together a Broken Vulcanite Plate.*—A dentist often needs three hands; for instance, when he essays to wax together the separate parts of a broken vulcanite plate. Two hands are necessary to properly hold the denture. My third hand, or assistant, is in the form of a device which holds the wax over the denture until it melts, then lets it drop. Take a bar of metal about one-twelfth of an inch thick, and solder to one end a small spoon-shaped piece large enough to hold as much wax as is ordinarily employed in waxing together the broken parts of a plate, and while the other end of the bar is stuck into a hole in the table, or held by a vise, let this spoon-shaped end be arched forward so as to rest about three inches above the table. Make a hole in the bottom of the spoon about one-twelfth of an inch in diameter. Into this spoon place the wax. Then set an alcohol flame under the bar at an inch or two from the wax, so that the heat will creep down the former to the latter. Soon it will melt and drop. The broken plate can thus be held steadily by two hands resting on the table.

To bend a Crown Post without Strain on the Crown.—Grasp the post with a pair of crown contouring pliers. The convex jaw of the pliers forces a portion of the post into the concave jaw, thus bending it.

To varnish the Insides of Cavities without touching the Margins with the Varnish.—Use an instrument having a swollen end—

either bulbous or fan-shaped. The little tool used by jewellers for oiling watches answers the purpose. It works on the principle of attraction. The swollen end holds by attraction the drop of varnish, thus preventing it from running up the shank. To further aid in this, do not dip it deep into the fluid. When touched to the tooth the superior attraction of the larger body causes the liquid to leave the instrument and spread itself in the cavity.

To readily reach the Posterior Teeth to inject Anesthetics.—The ordinary syringe needles are too short for this purpose. If made much longer, they are too frail and break. I obtained a long, thick needle, reinforced all its distance by a removable sheath. It was rather too long, and I reduced it to about three inches. I then inserted into the end of this thick needle an ordinary-sized needle-point about half an inch long, soldering same to place. Then I had a long and strong needle, capable of reaching well to the dentes sapientiae, yet fine pointed.

An Instrument for carrying Absorbent Cotton into Root-Canals, for the purpose of drying or to apply Medicament.—If you use for this purpose a barbed steel wire it is difficult to afterwards remove the cotton from it; and if you use such an instrument with the barbed end broken away, it is so smooth as to be apt to slip up through the cotton and pierce the foramen, and on withdrawing slip away from the cotton, leaving it in the canal. Something between these two extremes is desired. This I obtain by taking a fine steel wire and slightly roughing it near the point by rolling it between two separating files. This slight roughening needs to be repeated occasionally.

To remove Adherent Pieces of Modelling Composition from a Plaster Model.—When the modelling composition of your impression has been a little too much heated in softening it for drawing the model, so that pieces remain adherent to the plaster, do not attempt to scrape them off, but take a small piece of the composition between the thumb and finger, hold the same to an alcohol lamp until the part in the flame is molten, then press this forcibly to the pieces adhering to the plaster, giving it time to cool before withdrawing. The pieces on the model, if dry, will adhere more strongly to the composition than to the plaster, thus coming away.

Obtunding Sensitive Dentin by Pressure Anesthesia.—Not long ago I was excavating a very sensitive proximal upper incisor cavity.

I placed vapocain on cotton in the cavity, and then, instead of attempting, as heretofore, to control the evaporation of the ether by vulcanizable rubber held to place by the thumb and finger, I cut a strip of dam rubber about a half-inch wide and two inches long, and passing it into the proximal space, and then bringing the palatal end up through the adjoining proximal space to the labial region, I drew the ends taut over the cavity and directed the patient to hold them so by digital pressure. This was merely to confine the ether. But while waiting thus it occurred to me to attempt to force the drug into the dentinal tubuli by pressure applied through the dam rubber. I therefore took a pellet of vulcanizable rubber and forced it down between the teeth and into the cavity, trusting to its expansion to keep up the pressure. After about eight minutes the cavity was so far anesthetized that I excavated about a fortieth of an inch before striking sensitive dentin. Some later trials were not all so successful. Still, there is great promise in this method, and others should experiment on it and report results.—*Brief, July, 1901.*

FRUIT ACIDS GERMICIDAL.—According to the *Medical Times*, it may not be generally known that fruit acids are germicidal. The juice of limes and lemons is as deadly to cholera germs as corrosive sublimate, or sulphur fumes, or formaldehyd or any other disinfectant. If the juice of one lime or lemon be squeezed into a glass of water and is then left standing for ten or fifteen minutes, it will be disinfected. It makes little difference whether the water has been boiled or filtered or where it has been obtained.

ANTRAL DISEASE WITH COMPLICATION.—By Dr. Elmer Starr. A suppurating antrum had been drained by extracting a tooth and drilling through the upper jaw. The drainage canal was kept open by passing a probe daily; but eventually the pain accompanying this procedure became so great that the patient frequently allowed two or three days to pass without doing it. One morning, after three days had elapsed without the probe having been used, pain from the pent-up matter was so great that in desperation the patient took the probe and attempted to introduce it, but the canal was so nearly closed that considerable force was necessary to overcome the resistance. Suddenly the resistance yielded and the probe entered the antrum, and at the same instant, accompanied by a cracking noise, the eyeball protruded between the eyelids, being pushed completely out of its socket. I suppose the antrum was filled with gas under considerable pressure, and that the probe when it entered the antrum was pushed with force enough to break the floor of the eye. With the aid of a little pressure the eyeball was soon returned to the socket and suffered no permanent injury from the accident. *Buffalo Med. Jour.*

Letters.

WHAT MIS' DAWSON DONE TO THE BOSS.

(As told by the office-boy.)

One Morning the Boss was filling some Teeth on the Sly, for a poor Girl what couldn't Afford to go to the dental College. "Well then I'll Haf to do it for You myself," said the Boss. "I'll do them four gold fillings For four Dolers, and they Ought to be four Dolers Apiece, and I ain't Fooling when I say that, neither." So the Poor girl seemed reel Grateful 'cause he Done it so Cheap, and When he was about Haf through she said, "Can't you Make it Three Dolers, Dock?"

Just then the Bell rung, and I opened the Door and in come Mis' Dawson, Which is the Wife of the Stove foundry, over the River. She never Paid no attention to Me, but Bust right into The room Where the Boss was at Work. It always Makes the Boss mad to git Ketched working for Poor folks, for he Charges Six Dolers a Hour, and sometimes when there's a dental convention in Session in Town, and dentists from All over coming in to See him, and Bragging about how Swell their own Offisis is, he'll Run his prices Up to Eighteen and Twenty Dolers a Hour. This goes to Show our Offis aint No Snide Advertising concern.

Well, when the Boss Seen Mis' Dawson he Bowed 'way down Low, as you Might say he fairly Prostituted himself on the Floor before her. For this was the First time she'd Ever come to Us, being a Patient of Dock Soffoil's. So she began giving Dock Soffoil Fits, 'cause all his Fillings had Dropped out, and his Plates was so Ornery, and Lots of Things. She Ast the Boss couldn't he Do her Work right Away, 'cause sh'd Got so much to be Done, and she'd Got her Courage up and was Afeard she Couldn't Ever do it Again, and Would N't he Ast that Girl to Go Way, and let him Work for her. The Boss said yes, in a Minute or Two, and Then he just Socked the Balance of the Filling through for the Poor girl, and Slung the Chair round and Said, "There, that Will do."

So the Girl was Awful slow Putting on her Gloves, and fixing her Hat, and I Knowed well Enough what that Meant. Them kind of Acting folks is n't going to Pay, right Away. So she said pres-

ently. "Well, good bye, Dock. As soon as ever I Git the money to Spare I'll call and Pay Part of the Bill." And the Boss instid of Saying: "I'd Like part of it Now," Like he Usually does, only said, "That's all Right," he was so Took up with Thinking about the Big Job he Was Going to Do for Mis' Dawson. Then he Went in and Said, "I'm all Ready for you, Mis' Dawson." Then she Began Sighing, and she Kind of Shut her Eyes, and said How Nervous she Was, and she Was n't going to Have no Buzzing machine in her Mouth, and she Did n't believe in Scraping off tartar, and Particularly she Would n't have No gold show in her Teeth. Then she Said What was the Best tooth Powder, and While the Boss was telling her, she Began telling how her Grandma had double Teeth all Round, and she Never used no Tooth brush, and Anyway, lots of People said people Would have Better teeth if there Was n't no dentists, and in About a Hour the Boss Got her Coaxed into the Chair.

She said she Knowed there Was a Lot of teeth to be Filled, Only she Would n't let the Boss look at Only one, and that Was a small Hole on the side of a Front tooth. She said Dock Soffoil had Filled that Seventeen years Ago, and if she wasn't Mad at him she Would of Went back and Had him Do it over, 'cause it Ought n't to Of come out that Soon. She said Dock Soffoil Never made Holes in Teeth any Bigger, like some dentists Done, so they Could charge More. Then the Boss he Examined the Cavity and said he Must cut away the outer Corner, else it Would break Away after it was Filled. She Ast him if That would Make the Gold show any, and he said it Might, a Little. She Looked at him Like she thought he Was slow about Understanding Things, and says she, "I Believe I just Said I Would n't consent to have no gold Show." The Boss blushed, and Explained How the Decay had Went on and the Hole had Growed bigger, so As he Didn't See how he Could Fill it Right without making the Gold show a Little. Said She, "You do it the Way I say, and then We won't have no Quarrel, When I go to a Dentist I Expect him to Do what I Want, else I'll Go somewheres Else." So the Boss he Still thought His way was Right, but he Allowed he'd Do it her Way, after he'd Said he Could n't be Responsible for Results. Then he Commenced.

First Thing he Put on the Rubber dam. Miss Dawson Did n't seem to Know what it Was, but When he'd got it all fixed, she Kind

of Took a Panic and She tore it Off, before he had Time to say Don't do That. She Told him she Could n't have no such Fixings, and he Must n't Suffocate her, and she Made him Do all the Cutting out by Hand, and made more Fuss than a Runaway Automobile. About every Haf minute she'd tell him Was n't he Most done, and she Could n't Hold out Much longer, and how Gentle Dock Soffoil Was, and never Hurt people, and Lots of Folks thought There was n't no Dentist Anywhere Like him. Then she'd Groan, and Say he Must let her Rest Awhile, and so he'd Haf to Find a Fan, and Get her Smelling salts, and in About Twenty minutes she'd say, "Aint you Almost ready to Go Ahead, Dock; my Heart is Weak, and This suspense is Killing me."

In about two Hours the Boss got Done; and he Was Sweating like a Lawn sprinkler, and Mis' Dawson she Said she'd send her Daughter to Have some Work done, only she Could n't stand a Long Strain, and the Boss must Work Faster for her. I Seen from the Way the Boss looked that he wanted to Tell her to Go to the Diavolo, and Take her Daughter With her. But he Tried to Look like someone had Handed him a Slice of Neapolitan Ice Cream on a China plate, and When Mis' Dawson had Gone in the Hall to Fix her Bonnet, he Keeled over on the Lounge. Presently Mis' Dawson Seen nobody Was n't Paying no attention to her, she made a Kind of Grab at her Heart, and then she Slumped Down on a Arm chair near by, and I Heered the Boss's Plug Hat Go "Ker-er-unch!" and she Gasp'd, "Send for a Cab, Quick!" So I Seen a Policeman on the Sidewalk, and I Ast him to git one, and he Done it, and me and Him helped her Down the steps, and Put her In. A Big crowd had Gathered, and People Ast What it Was, and one Man said her Jaw was Broke, and A Woman said if That was her Sister she'd Sue that Dentist for Five thousand Dolers. Some other Folks Coming along Wanted to Know who'd Got arrested, and What they'd Done, and it Was about a Hour before Things settled Down Calm again. For Days after that People passing Would look at our House like They thought it Was a Pretty Tough Joint.

About six Months after that One Morning Mis' Dawson Come in Again, and the Boss went to the Reception room Smiling and Bowing, thinking she'd Come to Make a Reel Sure-Enough appointment for her Daughter. You see, she'd Sent word Four Times that Lutie, that's her Daughter, wanted to Come the Next morning, and

Could n't We make Everybody else Wait. But Lutie had n't even Ever come. The Boss smiled, as I Was saying, but Mis' Dawson Set up stiff, never Noticing. Then she Sailed in, and My! Did n't she Give the Boss Fits! She said he'd Broke the Corner off that Tooth Pounding it with that Hammer, and Now it had Got to be Filled so as it Would Show the Gold, and She had Haf a mind to Sue him for Damages, like all her Friends advised her to Do, for Ruining her Tooth.

The Boss he'd forgot all About how it Really was, and I had to Tell him, After he'd Filled Mis' Dawson's Tooth over Again Without Charging her Anything. Then he got Bilin Mad, especially when he Remembered the First bill had n't been Paid yet. What made him Maddest of All was, Getting a note From that Poor Girl, while We was Talking. I Picked it Out of the Waste basket and read it myself that Evening. It said: "Dock Contour: Two of Them Fillings you Put in Has come Out, and I ain't a-Going to Pay for Any of that Work you Done for me, 'cause I Seen you Wasn't Takin' no Pains at the Time, thinkin' About that Ritch lady Waitin' for you to Git through Workin' for me. Hereafter I'll git some Dentist What takes more Pains, to Do my Work."

Sometime Maybe I'll tell You how my Old Boss Dock Parker would Of Done with both of Them Patients. FRANK W. SAGE.

ILLEGAL PRACTITIONERS IN NEW YORK STATE.

ROCHESTER, N. Y., July 26, 1901.

To The Editor of The Digest,

MR. EDITOR:—On July 19 we convicted the first case of illegal practice in this state, excepting New York City. The offender plead guilty, and the fine of \$50 which was imposed was suspended by recommendation of the committee. One man working for the Albany Dental Association left town before his arrest could be made. Three others were arrested and their cases came up on the 17th, but were adjourned to July 30. Two of them have asked for a jury trial. These cases are tried in the police court. The employer of one of the three has made the assertion that he is going to carry the case through all the courts if it costs him \$5,000. We have ample evidence to convict if the law is carried out. A fund of \$600 has been raised for use in this district simply for detective services, so the cases can be put into the hands of the law

committee of the state society in proper form. The greatest trouble with nearly all of the other cases, in fact, what caused them to be failures, was hearsay evidence. We now have facts, and if there is not a conviction in every one of these cases we shall go over the ground again and give them a new trial.

There are many others here against whom evidence has been secured, but there is so much work in carrying through what we have that we shall wait until these cases are decided. We hope to read the tramp act to all these fellows, and if there are any in Chicago coming this way, tell them to take the Henrietta road or follow the Lake shore when they go through Monroe County. If you have any space in the DIGEST to burn red fire, just mention the fact that the Seventh District boys have their yellow ochre applied and are all united financially, professionally, socially and morally, and the hobo dentists must get out of here.

Yours truly,

F. W. PROSEUS.

TEETH OF NATIVES OF THE TROPICS.—Major Buchanan reports that in Bhagalpur it is the exception to find sound and healthy teeth. The most remarkable fact is the very great contrast between the upper and lower jaws, the teeth of the lower being oftener far worse than those of the upper. The author considers the cause to be neglect.

RECOVERY FROM PERNICIOUS ANEMIA.—Dr. W. Hunter (*Brit. Med. Jour.*) recently showed to the Medical Society of London a man who had completely recovered from pernicious anemia. For ten years he had suffered from purulent discharge from the gums, with recurrent pain in the tongue and stomach, attended with digestive disturbance and progressive anemia. Ultimately the red corpuscles in his blood reached only twenty-seven per cent of the normal, the hemoglobin only thirty-five per cent. His urine showed the characteristic dark, smoky tint, and he had irregular fever with numbness and tingling of the fingers. Under treatment by oral and gastric antisepsis (chiefly carbolic acid solution for the mouth, and bichlorid of mercury in small doses) he steadily improved; four injections of antistreptococcus serum had been administered in three weeks with apparent benefit. The red corpuscles had thus been increased forty per cent, and further treatment by the administration of liquor arsenicalis had brought the blood condition to: red corpuscles = 95 per cent, hemoglobin = 106 per cent. Cases of pernicious anemia often improved under arsenic alone, but invariably relapsed, and he considered this case the most hopeful he had yet seen. He attributed great importance to a septic condition of the mucous tract in the causation, and to antiseptic measures in the treatment. From this last statement, however, Dr. J. Broadbent dissented, and related several cases to the contrary.—*N. Y. Med. Jour.*

The Dental Digest.

PUBLISHED THE FIFTEENTH DAY OF EVERY MONTH

At 2231 Prairie Avenue, Chicago,

Where All Communications Should be Addressed.

Editorial.

TRIUMPH OF THE INDEPENDENT JOURNAL.

At its recent meeting the National Dental Association voted to give its papers and proceedings to the DENTAL DIGEST for publication. At the last meeting of the Illinois State Dental Society similar action was taken. This ensures to these two societies a very large circulation among the intelligent dentists of this and other countries, and we congratulate the readers of the DIGEST on our securing the most interesting and valuable papers of the year.

NATIONAL DENTAL ASSOCIATION MEETING.

The meeting of the National Dental Association at Milwaukee, Aug. 6-9, was one of the best conventions ever held by the dental profession. There were one or two features, however, which might be open to criticism. In the first place, the presiding officer did not hold those discussing the papers to the subject in hand, and thus much time was lost. Also, the members present were not restrained from moving about the room and talking during the sessions, all of which created more or less disorder. There was much dissatisfaction among the clinicians because for want of time they did not have an opportunity to properly conduct their clinics. When dentists prepare themselves to give a clinic and come by invitation a long distance for that purpose, it is not showing them proper consideration to allot only an hour for their work when a whole afternoon should be given. We should make the same criticism of the program as we have of those at some other recent meetings, namely, that it was too long, and some papers had to be omitted. We believe this difficulty will be remedied when the proposed change in the plan of work is adopted, which is, that there shall be three sections and that all papers of a scientific nature shall come before some one of them and not before the general meeting.

However, the meeting as a whole was such a big success that

these minor defects could well be overlooked. The energetic work of the president and of the chairman of the sections since last year's meeting resulted in the Association having the best lot of papers ever brought before it.

The local dentists deserve the sincere thanks of the Association for the royal way in which they entertained the visiting members and their families. The weather was cool and the hotel accommodations were excellent, so that every one present at the meeting will always have pleasant recollections of Milwaukee.

FRAUDULENT DENTAL DIPLOMAS.

As stated elsewhere, the National Association of Dental Faculties at its recent meeting raised \$3,000 to fight fraudulent diploma mills and to remove the stigma which now rests upon the name of American dentistry in Europe, and particularly in Germany. The National Dental Association also donated \$1,000 for the same purpose. As nothing tangible in the way of prosecution had been accomplished, the work and funds were turned over to the management of the Dental Protective Association by the National and Faculties' Associations, both these organizations pledging their support and cooperation.

The United States Consul at Munich, Germany, Honorable J. H. Worman, was at the Milwaukee meetings and explained to the various associations the lamentable state of affairs in Germany which is throwing such discredit on American colleges and dentists. At present writing the Consul is in Chicago in conference with the management of the Protective Association, and is furnishing evidence of inestimable value. Too much credit cannot be given him for his painstaking efforts in this matter, as for many months past he has devoted a great deal of his time and made large expenditures of his own funds in his earnest determination to see these wrongs righted. This journal will from time to time give its readers all the information possible on this important subject.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

At the meeting of this organization just held at Milwaukee it accomplished more than at any other convention in its history. The most important move was changing the course from three to four years, to begin with the term of 1903-4. The four terms are to be

of not less than seven months each year. All teaching is to be done in the daytime and not at night. The minimum fee for students was fixed at \$100, to begin with the term of 1902-3. The new curriculum is to be made applicable to the four years' course.

Two schools were admitted to membership in the Association, the New Orleans College of Dentistry and the Keokuk Dental College. Owing to the consolidation of the University of Denver Dental Department and the Colorado College of Dental Surgery, there is only one more school in the N. A. D. F. than there was a year ago.

An assessment not to exceed fifty dollars on each college to fight fraudulent diploma mills was made, and within an hour \$3,000 was raised.

The usual monotony of routine work was varied by the following incident: The investigating committee of the N. A. D. F. had preferred charges against the Dental Department of National University at Washington, and it was to be tried for infraction of the rules. Before a decision could be reached it secured an injunction from the Milwaukee courts restraining the Association from expelling or suspending it, so the proceedings were stopped. The next day, before another injunction could be secured, the National Association of Dental Examiners dropped this school from its recognized list of dental colleges, which was just as bad if not worse for it than being expelled from the N. A. D. F.

The Examiners also passed a resolution that they would recognize no school not a member of the Faculties' Association. These two acts show plainly that the Faculties' and Examiners' Associations are working together more harmoniously. This is doubly gratifying to us, because we have been urging for some years that these two organizations should work together without friction, thus increasing almost without limit the power of each for good. The opinion was freely expressed by members of both bodies that more had been accomplished at the recent meetings to bring the two organizations together than ever before, all of which is most encouraging.

Notices.

MAINE STATE DENTAL SOCIETY.

This society, at its annual meeting at Old Orchard, July 16-17, 1901, elected the following officers: Pres., W. S. Payson; V.-P., C. H. Merritt; Sec., H. A. Kelley; Treas., E. J. Roberts; Librarian, E. Bacon.

WISCONSIN STATE DENTAL ASSOCIATION.

On Aug. 5, 1901, this association elected the following officers: Pres., E. A. Gatterdam; V.-P., E. J. Hart; Sec., W. H. Mueller; Treas., H. A. Palmer. Milwaukee was chosen as the next meeting place, and the society will convene in July, 1902.

TENNESSEE STATE DENTAL ASSOCIATION.

At the annual meeting of this body, held at Nashville, July 20-31, 1901, the following officers were elected: Pres., J. T. Meadors; 1st V.-P., W. K. Slater; 2d V.-P., R. B. Bogle; Cor. Sec., Wm. Slack; Rec. Sec., A. S. Page; Treas., J. D. Towner.

NEW JERSEY STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Asbury Park, July 17-19, 1901, the following officers were elected: Pres., Wm L. Fish; V.-P., Frank Hindle; Sec., C. A. Meeker (reelected for the twenty-seventh time); Treas., H. A. Hull (reelected).

MINNESOTA STATE DENTAL ASSOCIATION.

At the annual meeting of this body, held at Duluth, July 30-Aug. 1, 1901, the following officers were elected: Pres., Alfred Owre; V.-P., R. H. Pierce; Sec., G. S. Todd; Treas., H. M. Reid; Master of Clinics, J. M. Walls; Chairman Ex. Com., S. R. Holden.

MISSOURI STATE DENTAL ASSOCIATION.

At the annual meeting of this association, held at Sedalia, July 9-12, 1901, the following officers were elected: Pres., Burton L. Thorpe; 1st V.-P., S. C. A. Rubey; 2d V.-P., J. W. Hull; Cor. Sec., J. H. Kennerly; Rec. Sec., H. H. Sullivan; Treas., J. T. Fry.

VIRGINIA STATE DENTAL ASSOCIATION.

At the annual meeting of this association, held at Natural Bridge, Aug. 1-3, 1901, the following officers were elected: Pres., W. E. Norris; V.-Ps., B. Bridgeforth, I. N. Smith, R. L. Simpson; Cor. Sec., J. Hall Moore; Rec. Sec., G. F. Keese; Treas., W. H. Ewald.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

At the annual meeting of this organization, held at Milwaukee, Aug. 2-6, 1901, the following officers were elected: Pres., J. F. Dowsley; V.-P. for East, C. A. Meeker; V.-P. for South, J. A. Hall; V.-P. for West, B. L. Thorpe; Sec. and Treas., J. Allen Osmun.

CALIFORNIA STATE DENTAL ASSOCIATION.

At the annual meeting of this body, held at Los Angeles, July, 1901, the following officers were elected: Pres., A. M. Parker; 1st V.-P., F. L. Platt; 2d V.-P., L. VanOrden; 3d V.-P., W. J. Taylor; Rec. Sec., W. Z. King; Cor. Sec., J. G. Parsons; Treas., T. M. Inglehart.

RHODE ISLAND STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Newport, July 9-11, 1901, the following officers were elected: Pres., R. L. Davis; V.-P., J. A. Lynch; Sec., C. A. Carr; Treas., H. W. Gillett; Librarian, D. E. Keefe; Ex. Com., P. B. Whitmarsh; J. E. Power, L. A. Wilbur.

COLORADO STATE DENTAL ASSOCIATION.

At the annual meeting of this society, held at Denver, July 9-11, 1901, the following officers were elected: Pres., J. S. Jackson; V.-P., T. Ashley; Sec., W. A. Brierley; Treas., Wm. Smedley; Chairman Ex. Com., F. Y. Herbert; Chairman Mem. Com., A. C. Watson. The next annual meeting will be held at Colorado Springs in June, 1902.

SOUTHERN BRANCH, NATIONAL DENTAL ASSOCIATION.

At the annual meeting of this organization, held at Nashville, July 29-31, 1901, the following officers were elected: Pres., H. H. Johnson; 1st V.-P., L. G. Noel; 2d V.-P., J. S. Vann; 3d V.-P., W. J. Mason; Treas., B. D. Brabson; Cor. Sec., C. L. Alexander; Rec. Sec., S. W. Foster. The next meeting will occur at Atlanta, Ga., in February, 1902.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

At the annual meeting of this association, held at Milwaukee, Aug. 1-6, 1901, the following officers were elected: Pres., W. F. Litch; V.-Pres., G. V. I. Brown; Sec., J. H. Kennerly (fifth term); Treas., H. W. Morgan (reelected); Ex. Com., S. W. Foster, H. B. Tileston, D. J. McMillen, J. I. Hart, J. B. Wilmott; Ad. Interim Com., J. P. Gray, W. T. McLean, A. H. Peck; Com. on Law, H. W. Morgan, W. A. Montelle, F. D. Weiss.

NATIONAL DENTAL ASSOCIATION.

At the fourth annual meeting of the National Dental Association, held at Milwaukee, Aug. 6-9, 1901, the following officers were elected for the ensuing year: Pres., J. A. Libbey, Pittsburg; V.-P., from East, S. H. Guilford, Philadelphia; V.-P., from South, L. G. Noel, Nashville; V.-P., from West, W. P. Dickinson, Minneapolis; Rec. Sec., A. H. Peck, Chicago; Cor. Sec., Josephine D. Pfeifer, Chicago; Treas., H. W. Morgan, Nashville; Executive Council, H. J. Burkhart, Batavia, N. Y.; B. Holly Smith, Baltimore; J. Y. Crawford, Nashville; C. C. Chittenden, Madison, Wis.; M. F. Finley, Washington. Executive Committee, J. D. Patterson, Kansas City; C. S. Butler, Buffalo; C. N. Johnson, Chicago; H. A. Smith, Cincinnati; V. H. Jackson, New York; T. P. Hinman, Atlanta; T. S. Waters, Baltimore; W. N. Cogan, Washington; G. V. I. Brown, Milwaukee. The next meeting will be held at Niagara Falls in August, 1902.

M. C. McNAMARA, D.D.S.

Dr. M. C. McNamara, an old resident of St. Louis, died of paralysis June 16, 1901. In his prime he was one of the most successful dentists, having at one time an income of not less than \$20,000 a year. The St. Louis

Dental Society held a special meeting at Dr. Conrad's office on June 17, and after several short addresses by a number of the members the following were chosen to act as pall-bearers: C. H. Manhard, Wm. Conrad, W. M. Bartlett, J. H. Kennerly, B. L. Thorpe, P. H. Eisloeffel, J. G. Harper, A. J. Prosser and A. Tschirner. A committee was appointed to draft a biographical sketch of the deceased, and submitted the following:

Dr. M. C. McNamara was born in 1829, in Ontario, Canada, of Irish parentage. He engaged in mercantile pursuits there in his earlier years, and later married Miss Katherine Aquesta Martin, to which union nine children were given. He was also a member of the Council in London, Canada. In 1863 he removed to Philadelphia and a year later came to St. Louis. Soon after his arrival here Dr. McNamara was graduated from the old St. Louis Dental College and began the practice of dentistry. Later he held a chair in the college. In 1896 he lost his wife and after that took little part in active business. He was a member of the Knights of St. Patrick and a number of charitable and Catholic religious organizations. He was a former president of the St. Louis Dental Society, a member of the Odontological Society of St. Louis and of the Missouri State Dental Association.

Dr. McNamara was an all-round dentist and took great pride in making his operations so nearly perfect as possible. He was ethical in every sense of the word. Personally Dr. McNamara was a fine specimen of an Irish gentleman and generous to a fault. For a number of years he insisted on entertaining the St. Louis Dental Society at its annual meetings for the election of officers. These meetings were held at his beautiful residence, and after the business of the session was disposed of an elaborate luncheon was served to his guests.

Having been long connected with the Jesuit Church at 9th and Washington avenue, by special permit he was buried from St. Francis Xavier Church, Grand and Lindell Boulevards, Rev Father Daniel McErlane, S. J., officiating, and was interred in Calvary Cemetery Tuesday, June 18, 1901.

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| JOHN G. HARPER, | } Committee. |
| WILLIAM N. CONRAD, | |
| ADAM FLICKINGER, | |

News Summary.

R. W. ROGERS, 89 years old, a dentist at Salem, Ia., died July 25, 1901.

C. S. STARKWEATHER, a dentist at Bellaire, O., was married Aug 1, 1901.

JACOB SENTY, a dentist at Prairie du Sac, Wis., was married Aug. 1, 1901.

H. B. BARBER, of Naperville, Ill., is regaining his health in Colorado Springs.

H. A. COSTNER, a dentist at Lincolnton, N. C., formerly of Chicago, died July 30, 1901.

EDGAR J. WARD, a prominent dentist at Chicago, died July 12, 1901, after a prolonged illness.

J. W. RAY, a dentist at St. Paul, died suddenly July 22, 1901, from an overdose of morphin.

JAMES H. SLOCUM, 54 years old, a dentist at Long Branch, N. J., died suddenly July 23, 1901.

I. N. LIVELY, 35 years old, a dentist at Montgomery, W. Va., died of consumption July 23, 1901.

BANKRUPT.—F. A. Loveland, dentist, 88 Boylston St., Boston, liabilities \$2,058.64. Assets none.

JAY G. VAN VALKENBURG, 28 years old, a dentist at Canastota, N. Y., died Aug. 5, 1901, of Bright's disease.

J. L. MCINTOSH, a dentist at Marion, Ill., has become mentally unbalanced and is now on trial for insanity.

VICARIOUS.—Smith: "Your wife seems very hoarse to-day!" Jones: "Yes, I came home very late last night."

BY MAIN STRENGTH.—"Does that young man next door to you play the piano by ear or by note?" "By main strength."

J. W. SELBY, 72 years old, general manager of the southern branch of the S. S. White Dental Mfg. Co. at Atlanta, died July 19, 1901.

R. HETTINGER, a dentist at Appleton, Wis., was stabbed July 1, 1901, during a fight in a hotel. He was seriously wounded but may recover.

DAUGHTER OF THE REVOLUTION.—"Maggie says she's a daughter of the Revolution." "Can she prove it?" "Sure; her father runs a merry-go-round."

H. G. DURKEE, whose home is said to have been in Nashville, Tenn., was drowned at St. Louis July 20, 1901, where he had been practising dentistry for a few weeks.

OF TWO EVILS.—Victim: O! This money I had saved for my wife to go to the Buffalo Exposition. Footpad: Well, hand it over blame quick, or she'll go on your life insurance.—*Puck*.

EDMUND WESTON, 71 years old, a dentist at Washington, D. C., died July 4, 1901. He attained the rank of captain during the civil war and was prominently connected with Masonry.

DENTAL FEES MUST BE PAID.—Two dentists in Eastern cities have recently brought suit against delinquent patients for dental services, and in both cases the jury has allowed the full amount.

CONNECTICUT STATE DENTAL COMMISSION.—This organization met July 12, 1901, for the first time since its appointment, and elected the following officers: Pres., E. W. Pratt; Recorder, J. Tenney Barker.

ILLINOIS STATE DENTAL LAW TO BE TESTED.—The right of the State Board of Dental Examiners to compel a dentist to register in each county in which he practices has been attacked in the courts by a Chicago dentist. He had one office in the city and another in Livingston county. Having a state license he did not register in the latter and was arrested.

IN EVIDENCE.—"I presume you carry a memento of some kind in that locket of yours?" "Precisely, it is a lock of my husband's hair." "But your husband is still alive." "Yes, but his hair is all gone."—*Ex.*

DRIVES NAIL THROUGH PALATE.—On Aug. 6, a two-year old boy at La Crosse, Wis., was running with a large nail in his mouth, when he stumbled and fell, driving it through the palate and roof of mouth. His recovery is doubtful.

OKLAHOMA EXAMINING BOARD.—On July 30, 1901, the governor of Oklahoma reorganized the Territorial Board of Dental Examiners, appointing Drs. A. C. Hixon, A. M. Detrick, Fred Sparks, and reappointing Drs. L. A. Kelsey and J. Q. Waddell.

TIO DOULOUREUX.—Dr. A. Grandclement has treated four cases of tic douloureux with subcutaneous injections of a mixture of antipyrin and cocaine. One of the patients had been suffering for five years. All four patients were cured.—*Merck's Archives.*

A. K. SUDDOTH, a dentist at Memphis, Tenn., died July 2, 1901. He had been ill for several days, but was a strong believer in Christian Science and refused the services of a physician. Unfortunately, the prayers offered up by other devotees of the cult did not save him.

SPITEFUL DENTIST.—George W. Heatley, a retired dentist in Brooklyn, has offered to pay \$500 to any broker selling to negroes exclusively a house which the dentist owns in the fashionable residence district of Brooklyn. He had trouble with his neighbors some years ago and is now evidently trying to get even.

WIDOW OF CUBAN DENTIST FILES CLAIM.—Mme. Rita L. de Ruiz, widow of the American dentist who was killed by the Spanish authorities in Cuba just before the outbreak of the Spanish war, filed before the Spanish Claims Commission at Washington on July 31, 1901, a claim for \$75,000 damages for her husband's death.

FICKLENESS EXPENSIVE.—H. F. Helms, dentist, formerly of Des Moines, Ia., and now of Lincoln, Neb., has been made the defendant in a \$10,000 damage suit for breach of promise. The complainant, a young woman of Chicago, affirms that Dr. Helms became engaged to her and then changed his mind, asking to be released.

DAMAGE SUITS.—A dentist at Springfield, Ill., has been sued for \$5,000 damages by a patient who claims the dentist broke his jaw in extracting a tooth. A dentist in Poughkeepsie, N. Y., is in exactly the same fix, and another in Indiana has been sued for \$5,000 damages by a woman who claims he improperly used gas, causing hysteria.

ACCURATE MEASUREMENT.—A dentist in a small town recently received the following letter from a girl in the country in regard to a set of teeth: "Deer sur—my mouth measures $4\frac{1}{8}$ inches acrost, and $11\frac{1}{8}$ inches around from tip to tip. It's kinder heart shaped and also hummucky around the aiges. Has a hare lip in won korner when I grinn. If this description want fit I guess I'll have to come upp."

"DRAW ONE."—A farmer had just left an aching molar at the city dentist's office, and stopped at a lunch-counter for a stimulant. "Gimme a cup of cawfee," he said, sitting down on one of the stools. "Draw one!" called out the girl behind the counter. "That's what he did!" responded Uncle Si, with a delighted grin. "How'd you know it?"

ADAM'S DIET.—Charters White has examined the teeth of some paleolithic skulls. By dissolving the tartar and subjecting the residue to the microscope he has found grain-husk, spiral vessels from plants, starch, fragments of fish-teeth, fruit-cells, down-barblets and wool. There were also sandy particles, referable to the stones used in grinding the grain. Evidently our ancestors did not stop to skin their sheep or pluck their fowls.—*Ex.*

CONSOLIDATION.—The dental schools of Colorado, formerly known as the "Denver School of Dentistry, Dental Department of the University of Denver," and the "Colorado College of Dental Surgery, Corporation," have combined, forming a union school which will conduct the Dental Department of the University of Denver hereafter under the name of the "Colorado College of Dental Surgery, Corporation." Dr. A. L. Whitney of Denver, is secretary.

ILLINOIS EXAMINERS ACCUSED.—A dentist student at Rockford has preferred charges against the Illinois State Board of Dental Examiners, claiming that he was offered a license without examination for \$500, and that when he refused to pay that sum the board would not pass him on the examination, although he answered nearly all the questions correctly. The board claims that the young man is trying to blackmail it into giving him a diploma.

GERMAN DENTISTS WORKING AGAINST AMERICANS.—According to newspaper reports, the native dentists of Germany are asking the physicians' societies to secure the passage of a bill prohibiting German medical men from administering anesthetics when the "mechanical dentists," as the German practitioners style the Americans, are pulling teeth. Physicians, however, are not favorable to the move, perceiving it to be spite-work and not justifiable.

SUNDAY DENTISTRY PROHIBITED.—Pittsburg has passed blue laws which, among other things, prohibit dentists from doing any unnecessary work on Sunday. Some of the rabid Puritans want the laws to read that dentists shall do no work at all, and that even the hospitals shall be closed, but the greater majority of residents, as well as the dentists, are complaining against such strictness. The question of what is "necessary" work will be interesting to solve.

ROBBERY OF DENTISTS.—According to newspaper reports, several dentists in Wisconsin, Michigan, Ohio and New York have been robbed recently by sneak-thieves, who hang around the offices until the owners go to lunch or quit work for the night. The thieves then enter, usually by means of skeleton keys, and take all the gold and solder in sight, touching nothing else. It would be well for practitioners throughout the country to be on the lookout for these gentry.

SUPRARENAL CAPSULE AS A REMEDY FOR SNORING.—It has come to our knowledge that a middle-aged man who for years had had a household reputation as a most sonorous snorer, began to take a preparation of the suprarenal capsule as a remedy for chronic nasal catarrh. Not only did it mitigate the supersecretion of mucus, but his snoring practically ceased. Whether or not the occurrence was anything more than a coincidence, we do not undertake to say.—*N. Y. Med. Jour.*

"SHOOT THE CHUTES" BAD FOR FALSE TEETH.—A traveling dentist in Brooklyn made a set of artificial teeth for a woman in that city recently, for which she paid him \$10. Soon after she went to Coney Island to shoot the chutes, and while going down the incline she sneezed so violently that her teeth flew out of her mouth into the water. She is now suing the dentist to recover the fee, claiming that the teeth did not fit, but the chief exhibit for the prosecution is missing.

IODOFORM AS AN OBSCURER OF THE X-RAY.—Professor A. Soret (*Revue Med. de Nor.*) records a case in which thin patches of iodoform, which had been used in the dressing, adhering to a hand submitted to the X-ray, gave rise on the skiagram to the appearance of spots suggesting the presence of foreign bodies in the tissues of the hand. Iodoform dressings, gauze, etc., in consequence of the great absorption by the drug of the X-ray, should be avoided when skiagraphy is contemplated.

EUCALYPTO-PERCHA.—I wish to call attention to the remark that gutta-percha thoroughly dissolved in chloroform (chloro-percha) and placed in a root canal in time occupies less space than it did at first, which phenomenon we know to be due to shrinkage. I would like to say that gutta-percha dissolved in eucalyptus oil (eucalypto-percha) does not contract but remains the same, the eucalyptus oil even penetrating into the dentinal tubuli. I have found that to be the best material, and have used it for a long time (seven years or so).—*Dr. Leroy, International.*

MILK AN ANTIDOTE FOR CARBOLIC ACID.—Two cases of carbolic acid poisoning are reported by Dr. Moffat Flynn in the *Med. Brief*, in which milk proved an effective antidote. A young married woman, who in a fit of despondency took one-half ounce of the acid with suicidal intent, was made to drink over a pint of milk. Later an emetic was given and also strychnin, as the heart began to fail. She recovered. A child to whom the mother had given by mistake a mixture of carbolic acid and glycerin was made to drink a large amount of milk and recovered.

SURGEON'S SEWING MACHINE, says *American Medicine*, was exhibited by Dr. Paul Michel at the late Congress of Medicine. The instrument is quite small, easily held in the hands, and has received the Barbier prize of the Faculte de Medicin. In future a surgeon need not slowly stitch the edges of a wound. With the left hand he keeps the two lips together, and with the right he fastens it by means of little clasps or "agrafes" of nickel points which penetrate only the epidermis, and are not painful. These catches are applied to the machine, a species of pincer armed with them, which can be disinfected by heating it red-hot.

RELATIVE VALUE OF ANESTHETICS.—The danger rate begins to increase after the thirtieth year under chloroform, but with ether it remains constant until after the fiftieth year. Apparently none of the mixtures of ether or chloroform gives such satisfactory results as ether alone. Nitrous oxid with or without oxygen shows the lowest percentage of complications. The final conclusion of the anesthetic committee of the British Medical Association is that the most important factor is the skill of the anesthetist, and that to insure the best results he must be one of large experience and good judgment.—*Ed. Albany Medical Annals.*

ILLEGAL PRACTICE DANGEROUS.—Two dentists in York, Pa., who were unregistered, have been arrested recently. One in Michigan was fined \$25 for this offense in June, and was again caught practising, although he had no license. This time he was fined \$37 and committed to jail for twenty days. A man in West Duluth, Minn., was last month bound over to the grand jury for having no license. Those dentists who were arrested in Rhode Island some time ago for illegal practice raised a demurrer to the indictment, claiming that the charges were not specific enough, but the court has overruled same. Finally, the New York State Dental Society is making all illegal practitioners in the state "move on."

ARMY DENTAL EXAMINING BOARD DISSOLVED.—The board of three appointed to examine candidates for the position of army dentists, having practically completed its work in Washington, has been disbanded and its members assigned to other duties. Dr. John S. Marshall is ordered to report for duty at San Francisco, Dr. R. W. Morgan at Havana, Cuba, and Dr. R. T. Oliver at Manila. Although the general impression seemed to be that this board would be retained permanently in Washington, we predicted in an editorial in the January, 1901, *DIGEST*, that the need of dentists in the army was so great that the members of this board would probably be assigned to actual army service so soon as the examinations were completed.

TRUE AND SHOULD STAND.—One of the speakers before the recent meeting of the Massachusetts State Dental Society stated that he was not familiar with technical dental terms, so he hoped that if on this account he made a poor speech it would not be assumed that he always made poor speeches. In making this point he told the following story: "The mate of a certain schooner was in the habit of drinking more than was good for him. On one occasion, after he had recovered from an unusually severe attack of intoxication, he was looking over the log and found that the captain had inscribed therein on a certain date: 'Mate drunk.' The mate promptly went to the captain and asked why such a statement had been written down. 'It is true, isn't it?' asked the captain. 'Yes,' said the mate. 'Then let it stand,' said the captain. A few days later the captain in looking over the log found this inscription: 'Captain sober.' He summoned the mate and asked him what he meant by taking such a liberty. 'It's true, isn't it?' asked the mate. 'Yes,' said the captain, but—' 'Then let it stand,' said the mate."

SLANDER BY ONE MEDICAL MAN AGAINST ANOTHER has recently been tried at the non-jury sittings of the High Court at the town of Barre,

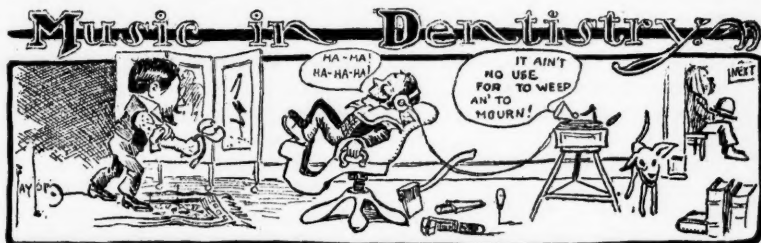
Ont. Dr. L. H. Campbell, of Bradford, Ont., sued Dr. L. Clement of the same place, for libel. It appears that the defendant wrote a letter, accusing the plaintiff of want of skill in his profession. The letter was addressed to a friend of Dr. Campbell, in which Dr. Clement offered to put up \$50 to \$100 that if a post-mortem were held on a certain case his charges would be substantiated. At the trial the defendant conducted his own case. Headmitted writing the letter and said there was no malice; that his action was in the public interest. He further admitted that his practice had been reduced two-thirds since Dr. Campbell had come to practice in Bradford. Judgment was given for the plaintiff for \$200 with costs, although the judge remarked he felt tempted to allow the full amount asked for, viz, \$1,000.

LEUCOPLAKIA LINGUÆ.—Dr. M. L. Heidingsfeld demonstrated from lantern slides a case of leucoplakia linguæ of ten years' duration in an individual infected with syphilis, the latter of twenty years' duration. Some of the leucoplakia areas were the size and thickness of a split butter-bean, and a radical surgical extirpation was made of these, November, 1900. Pathologic examination revealed the condition to be distinctly preepitheliomatous in character—marked proliferation and down-growth of the epidermis and areas of degeneration with a nest-like arrangement of the epithelium. A good wall of connective tissue separated it from underlying structures. A cellular infiltration was nowhere evident, and the only pathologic evidence of syphilis was an endarteritis obliterans.—*Jour. A. M. A.*

MEDICAL APHORISM.—1. Life is short, patients fastidious, and the brethren deceptive. 2. Practice is a field of which tact is the manure. 3. Patients are comparable to flannel—neither can be quitted without danger. 4. The physician who absents himself runs the same risk as the lover who leaves his mistress; he is pretty sure to find himself supplanted. 5. Would you rid yourself of a tiresome patient, present your bill. 6. The patient who pays his attendant is but exacting; he who does not is a despot. 7. The physician who depends upon the gratitude of his patient for his fees is like the traveler who waited upon the bank of a river until it would finish flowing that he might cross to the other side. 8. Modesty, simplicity, truthfulness!—cleansing virtues, everywhere but at the bedside; there simplicity is construed as hesitation, modesty as want of confidence, truth as impoliteness. 9. To keep within the limits of a dignified assurance without falling into the ridiculous vauntings of the boaster, constitutes the supreme talent of the physician. 10. Remember always to appear to do something—above all when you are doing nothing. 11. With equal, and even inferior, talent, the cleanly and genteelly-dressed physician has a great advantage over the untidy one.—*Canada Lancet.*

SAURIAN DENTISTRY.—The big alligator in the New York Zoological Park chewed up one of his smaller companions recently, so it was decided to cut off some of the offender's teeth. First, the smaller alligators were driven out of the tank, and then a stone boat made to fit over the big fellow was placed in the water and the latter drawn off. As the stone boat settled over the alligator nooses were attached to every available part of his body and

fastened to the railings, half a dozen being required to secure his tail. He bit the inch ropes in two as if they were so many bits of string, so his jaws had to be fastened with wire cables. When he was trussed up so that he could not move, the keepers put a piece of scantling between his jaws and then cut off with saws every dangerous tooth. We do not imagine any regular practitioner would hanker for a job of this kind.



Dr. Laborde of Paris has discovered a method of extracting teeth without pain by accompanying the operation by sweet music. The ear-pieces of a phonograph are applied to the patient's ears, the laughing gas then applied and while the phonograph reels off gay tunes the teeth are pulled out. The patients usually smile throughout the entire operation. American dentists will probably soon put this method into operation. The phonograph would play almost any air, depending upon circumstances. "You Are up Against the Real Thing Now," would be appropriate for almost all cases. If the patient showed signs of coming out from under the influence of the gas before the tooth was extracted, and more of the anesthetic had to be used, the phonograph could play, "Well, I Guess That Will Hold You for Awhile." If the dentist suspected that the patient intended to have the work "charged" the music-box could play, "Well, If You Ain't Got No Money Why You Needn't Come Around."—*Chicago Tribune*.

BURLESQUE ADVERTISING.—In the May issue of the *DIGEST* we reported that the dental parlors at Altoona, Pa., had become so extravagant in their advertisements that several of the reputable dentists of the city had issued an unsigned Burlesque Advertisement, to enlighten the community as to the methods and promises of fakirs. Several of our subscribers having expressed a desire to see same, we reproduce it herewith:

TEETH! TEETH!! TEETH!!! NEW YORK AND CHICAGO LIMITED DENTAL ASSOCIATION!

THE TWENTIETH CENTURY DENTISTS have organized the above association for the "LIMITED EXPRESS" purpose of catering to the wants and dental requirements of all individuals who don't give a rubber dam how dental work is done or by whom, just so the price is inconsistent with good material and skillful service. The Manager in Charge, Engineer, Conductor and Brakeman are all full-fledged graduates of the most renowned Dental Colleges of the Old and New World (the Philippine Islands included) and are the only

lineal descendants in the direct "Mail" line of such Eminent Scientists as "Herodotus," 484 B. C., and others—from which time through all the dim vista of past generations our Association and identity have been kept intact. From the ruins of Pompeii and the Pyramids of Egypt relics of our ancestral skill and ingenuity have from time to time been recovered, which, from a historical standpoint, establishes beyond contradiction our rights and claims to Professional Antiquity. Our superiority thus established over the more recent and modern productions of latter day teachings, enables us to DO YOU a greater service for less real cash, which we extract, by your paying, without pain, Free of Charge. "Dental Catorphoresis," an unsuccessful and abandoned experiment, has by us been supplanted by Hypnotic Power and INFLUENCE which enables us to perform all operations not only painlessly, but without your personal, mental or physical knowledge. The horror of the Dental chair is but a dream.

Being the original and sole owners of large Gold Mines in the Klondike Region, and a Silver Mine in Nevada, we are enabled to PRODUCE work requiring such materials below ACTUAL COST, and the absolute purity of the metals is fully guaranteed by a U. S. Mint Assayist. Because of such advantage over our competitors, who make what are commonly known as "Hollow or Shell Crowns," ours are absolutely solid, cast in moulds from the original ingot metal. In addition to Gold Crown and Bridge work we are prepared to introduce the very latest Spring Style (direct from Paris) of Window Crowns, including Bay Window Crowns, the Oval, Square or Octagon Style, with Beveled Edge French Plate or American Glass Fronts, as preferred by the patient.

In order to avoid the rush incidental to such unprecedented demands as are made upon our valuable time, we take all impressions of the mouth in infancy prior to the eruption of the first set or deciduous teeth, models of which are made and stored away in large and commodious vaults provided for the purpose. Being thus prepared years in advance the patient is not required to call for a second impression, but can order TEETH by mail, phone or wire, and to avoid additional delay we have purchased the very latest thing out in the form of an "Automobile Delivery Wagon," with a guaranteed speed of 150 miles per hour. The various well-known impression materials, Plaster, Impression Compound and Wax, have been abandoned and impressions are taken only with the original clay or mud, imported direct by us from the Garden of Eden. None without the signature of Adam and Eve being accepted, this precaution being taken to prevent adulteration or substitution of worthless material.

ARTIFICIAL TEETH

Are Guaranteed to approximate more closely the natural organs than those used by any other Dentist, as immediately after the battle of San Juan, Santiago, and the destruction of the Spanish fleet our representatives were upon the scene and procured all the available teeth to be found in the mouths of the dead Spaniards, and to those contemplating going abroad this will prove a decided advantage, inasmuch as Spanish and other foreign languages can

be spoken most fluently. When preferred all our Teeth will be furnished with the latest improved Morgan & Wright Rubber Tire or Rims with single or double tubing, fully inflated, thus enabling the patient to talk continuously without danger of LOSING WIND or becoming deflated—a decided advantage to step mothers, old maids or widows. Because of the fact that guarantees for a limited number of years are rendered void in the event of the Manager going to ———, we have decided to guarantee all operations and work from the birth of Adam to Eternity. Beyond this our future address may be obtained from "St. Peter at the Gate."

DON'T FAIL TO COME TO OUR GRAND OPENING.

Spanish, Filipino and the Chinese languages spoken, with a large retinue of Chinese servants and a French Butler in constant attendance. ICE CREAM and CAKE will be served by them FREE OF CHARGE daily from 9 a. m. to 9 p. m. To those more bibulously inclined "Mumm's Extra Dry" will be served free by the French Butler, in addition to an elaborate Menu of Limberger Cheese, Spanish Pickled Mackerel and Holland Herring.

BABIES WILL BE VACCINATED FREE ON BARGAIN DAYS!

And a competent guide furnished free to conduct all Out-of-Town patrons through Altoona's new U. S. Federal or Public Building.

Be on the lookout for notice of "Mill End Sale" or Job Lots of Teeth Fillings, etc. For the sole accommodation of those who are ashamed to be seen visiting our establishment in daylight we have decided to keep open evenings from 6 to 10 o'clock.

A pair of verdant farmers, who had just disposed of their products at the City Market a few days since and whose pockets were somewhat inflated by the ready cash thus obtained, were overheard discussing the possibilities of the future. The more youthful of the two, with a liberal litter of HAYSEED fresh from the rural districts still clinging to his anatomy, being impressed with the future possibilities of the environments of a city life, immediately decided to invest his cash on hand in a Dental Outfit and to establish one of those new-fangled ASSOCIATIONS, as a most promising field for remuneration and the development of his latent powers and, tearfully bidding adieu to the companion of his youth, he immediately launched his bark upon the sea of professional life as Dr. Perkins, of Pumpkinville, Manager in Charge.

THIS ADVERTISEMENT IS ALL A FAKE!

Who of you that have perused it ever saw or read an advertisement in print by such eminent professional gentlemen of the Medical profession as Pancoast, Agnew, Garretson or Pepper, or of the Dental as Atkinson, Kingsley, Kingsbury, Webb, Darby, Jack, Peirce and others? Nay; not one! Professional men of learning, recognized ability and talent are not obliged to resort to advertising schemes to secure patronage. Their services are sought and their ability recognized by the educated and refined element, who are always prepared and willing to compensate them for what they really are and not what they pretend to be. "YOU CAN NOT MAKE A SILK PURSE OUT OF A SOW'S EAR." TEETH! TEETH!! TEETH!!!

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